THE INDUSTRY'S RECOGNIZED AUTHORITY

ROCK PRODUCTS

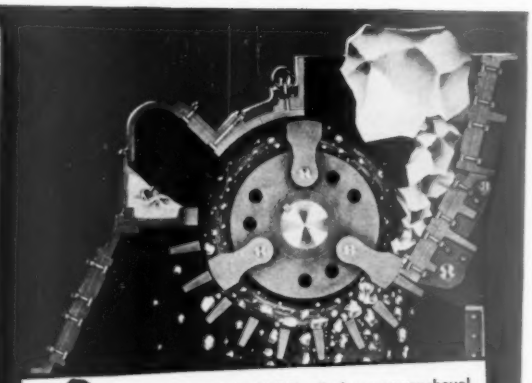
MARCH 1951

LARGEST PRODUCER CIRCULATION IN THE HISTORY OF THE FIELD

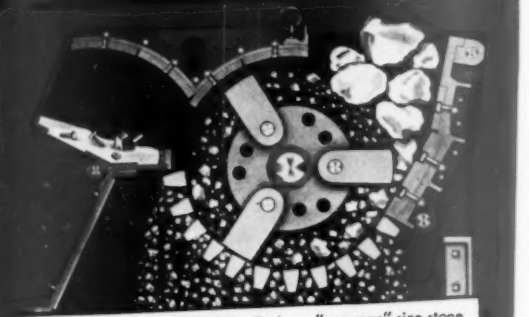
Gravel plant in England depicts use of gravel concrete structures

WILLIAMS HAMMERMILLS for the ~~old~~ new 1-2-3 PUNCH in the CRUSHED STONE FIELD

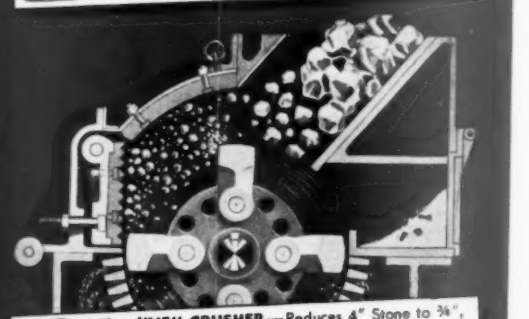
You save operating costs because stone is crushed to desired size in one operation ... You save installation cost because you eliminate the need for additional machinery, foundations, conveyors, power drives and buildings.



1 **The "SUPER SLUGGER"**—Reduces power shovel loaded rock to 1½" or ¾" stone in One Operation. Capacities 65 to 550 tons per hour.



2 **The "SLUGGER"**—Reduces "one-man" size stone (75 to 100 lb. pieces) to 1¼", ¾" or Agricultural Limestone in One Operation. Capacities 4 to 100 tons per hour.



3 **The "NF" CRUSHER**—Reduces 4" Stone to ¾", ½" or Agricultural Limestone in One Operation. Made in a large range of sizes with capacities from 5 to 200 tons per hour.

WILLIAMS ALSO MAKES . . .

Impact and Roller Mills for 200 to 325 mesh grinding; drier mills; air separators; vibrating screens; steel bins; complete "packaged" crushing and grinding plants.

USE OUR FREE TESTING LABORATORY

Submit your grinding problems to Williams. A sample of the material and description of the desired result will set our facilities to work on a solution to your problem. Visits during test runs and technical consultations are invited.

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
800 St. Louis Avenue — St. Louis 6, Mo.

WC-80-2

WILLIAMS

CRUSHERS — GRINDERS — SHREDDERS

OLDEST AND LARGEST MANUFACTURER OF HAMMERMILLS IN THE WORLD

No one speed reducer solves every reduction problem

That's why LINK-BELT builds all 3

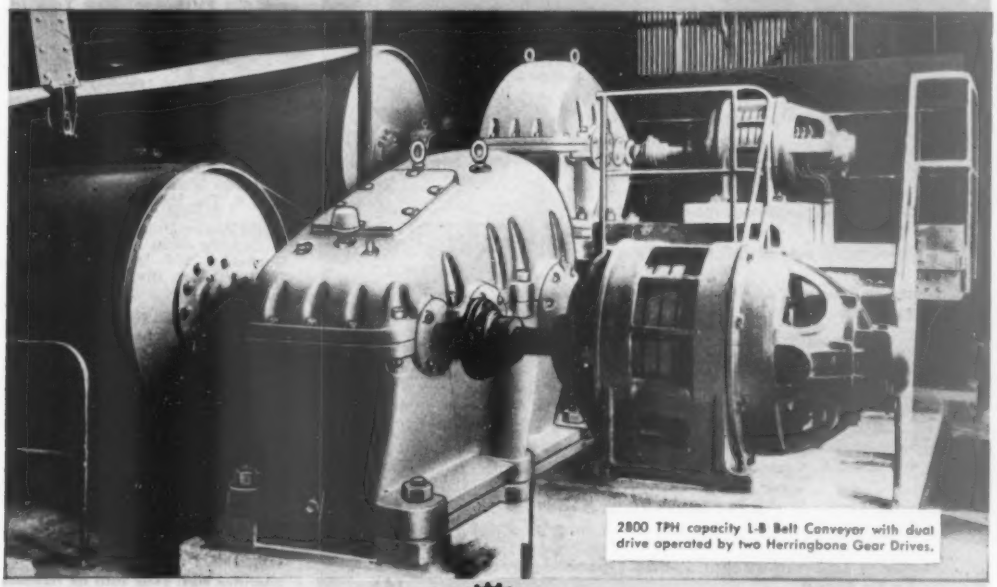
WHETHER it's a helical, a herringbone or worm gear drive that best fits your needs—you get an unbiased recommendation, an incomparable product from your Link-Belt power transmission engineer.

That's why Link-Belt builds all three; has no axe to grind. You can be sure you get the one that suits all your requirements for ratio, space, shaft position, shock loading and many other factors. Precision-engineered for quiet, economical power transmission, all Link-Belt drives will give you long service under the toughest operating conditions.

On Worm Gear Drives write for Book 2324

On Helical Gear Drives write for Book 2247

On Herringbone Gear Drives write for Book 2419



2800 TPH capacity L-B Belt Conveyor with dual drive operated by two Herringbone Gear Drives.

LINK-BELT

ENCLOSED GEAR DRIVES

12.118-A

LINK-BELT COMPANY, Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in principal cities.

ROCK PRODUCTS

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Bror Nordberg
Editor

Nathan C. Rockwood
Editorial Consultant

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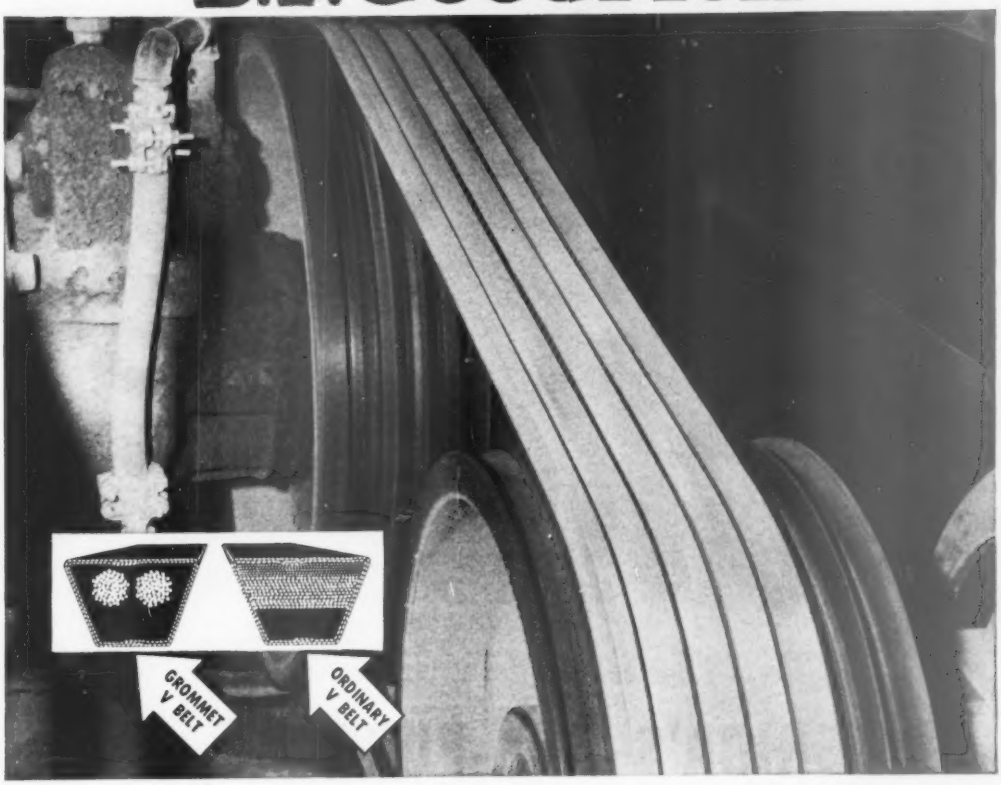
RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER



Five grommet V belts doing the work of 8

B. F. Goodrich grommet V belts cut costs 20 to 50%

THIS is actually an 8-belt drive but a plant accident damaged three of the belts and the engineers decided to let the remaining five belts run and see what happened. They've done the job perfectly because they're B. F. Goodrich grommet V belts — here's where that extra strength comes from:

No cord ends — A grommet is endless, made by winding heavy cord on itself to form an endless loop. It has no overlapping ends. Because most of the failures in ordinary V belts occur in the region where cords overlap, the endless cord section in a grommet V belt eliminates such failures.

Concentrated cord strength — All of the cord material in a B. F. Goodrich grommet multiple-V belt is *concentrated* in twin grommets, positioned close to the driving faces of the pulley. No layers of cords to rub against one another and generate heat; cord and adhesion failures are reduced.

Better grip, less slip — Because a grommet is endless, a grommet V belt is more flexible, grips the pulleys better. Size for size, grommet multiple-V belts will give ⅓ more gripping power, pull heavier loads with a higher safety factor.

Only B. F. Goodrich has the grommet! — No other multiple-V belt is a grommet V belt (U. S. Patent No. 2,233,294). Now available in C, D and E sections. See your local B. F. Goodrich distributor. Ask him to show you his "X-ray" belt that illustrates grommet construction clearly. *The B. F. Goodrich Company, Industrial and General Products Division, Akron, Ohio.*

Grommet V Belts BY

B.F.Goodrich

RUBBER FOR INDUSTRY

"Cat" Bulldozer

AMERICA'S ALL-PURPOSE TOOL

"You can always depend on 'Cat' products, and for production they can't be beat!" That's what Walter Lindberg of A. Lindberg & Sons thinks of this "Caterpillar" Bulldozer, stripping in a gravel pit near Negaunee, Michigan. And Mr. Lindberg has something else to say that makes a lot of sense: "We have some very fine dealer service up here, and that is very important to us."

These machines give you matched design—tractor and 'dozer built to work together. This rugged unit is a bear at meeting work schedules. Sturdy construction and quality materials enable it to keep punching full time without down-time, and the special steel cutting edge of the blade hammers through the toughest going. Most important of all, the precision methods used in "Caterpillar" factories build extra years of life into these tools.

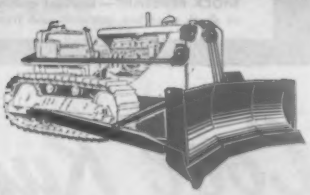
For help with your equipment problems, see your "Caterpillar" dealer *now*. Today's expanding military program has high priority. But it is recognized that our national preparedness depends upon stepped-up civilian production too. We must have more lumber, coal, food and essential ores. We must continue to build and improve America's vital network of highways. So your "Caterpillar" dealer is especially interested in meeting your needs—through equipment replacement and by exercising his working partnership with you to keep the machinery you have *on the job*.

CATERPILLAR, PEORIA, ILLINOIS

This "Caterpillar" D8 Tractor with No. 8S 'Dozer strips and 'dozes for this entire quarry pit, which has a daily output of 400 to 500 tons of aggregates per 8-hr. day. Averaging 3-4 yd. loads, this rugged tool makes 60 trips per hr. on haul distances up to 200 ft. in the pit near Negaunee, Michigan. Owner Walter Lindberg says: "We have used 'Cat' products for many years and find the machines tops in the earth-moving and engine fields!" . . . Price of a standard "Caterpillar" D8 Tractor is $15,000; No. 8S Bulldozer, $1,775; No. 25 Cable Control, $1,630, f.o.b. Peoria. Prices subject to change without notice.

"CATERPILLAR" BULLDOZER EXTRA FEATURES

1. Tractor and 'dozer *broken to harness*, and a size for every need.
2. Moldboard curvature for active, *rolling*, higher production loads.
3. Box section side arms — extra thick at points of greatest stress.
4. Choice of straight or angling type of blade, simple to maneuver and easy to adjust or detach.
5. Your choice of hydraulic or manual cable controls.
6. The power of the "Caterpillar" Diesel Engine is geared to blade *capacity*.

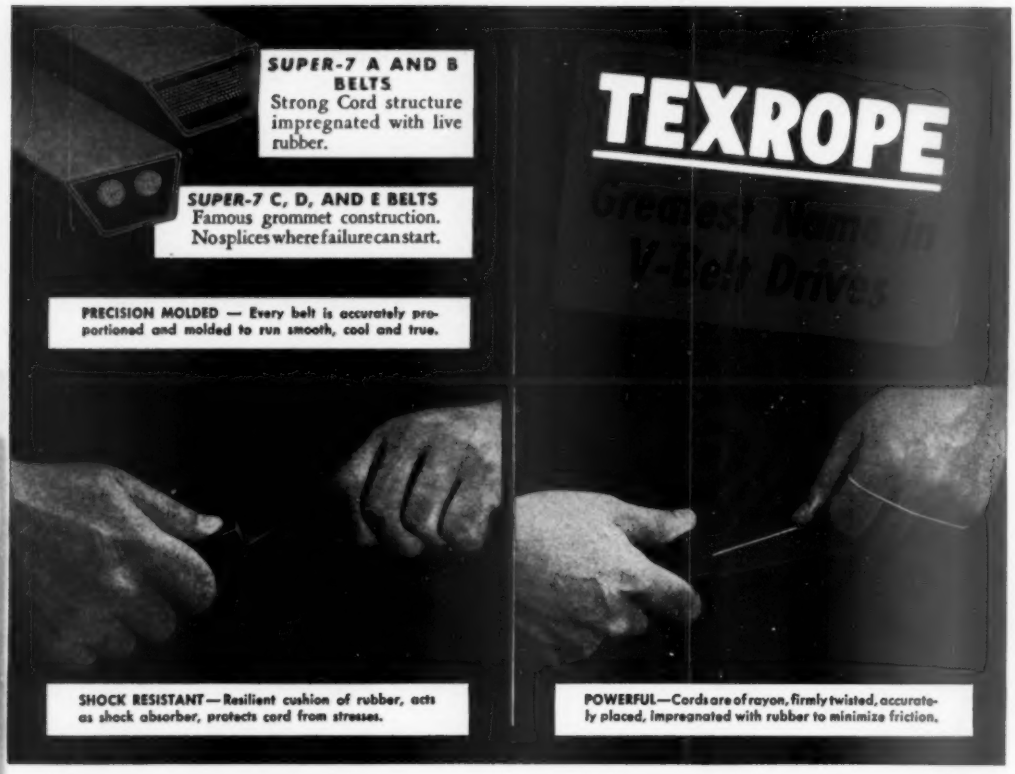


NEW ADDITION TO 'DOZER LINE

Here's a specialist that can step up production and cut costs. It's the brand new No. 8U 'Dozer for use with the "Caterpillar" D8 Tractor, with cable control. Working best in loose or light material, the end portions of this 'dozer's blade extend forward to give it a U shape. This makes it possible to drift large loads without spillage, making it possible to 'doze longer distances for bigger production. The No. 8U is built to the same high standards of strength and long life as the other "Caterpillar" Bulldozers. The versatility of this new tool gives it excellent performance on all kinds of 'dozing jobs, from stockpiling to pioneering.

CATERPILLAR

DIESEL ENGINES · TRACTORS · MOTOR GRADERS · EARTHMOVING EQUIPMENT


SUPER-7 A AND B BELTS
Strong Cord structure impregnated with live rubber.
SUPER-7 C, D, AND E BELTS
Famous grommet construction. No splices where failure can start.
PRECISION MOLDED — Every belt is accurately proportioned and molded to run smooth, cool and true.
TEXROPE
Greatest Name in V-Belt Drives
SHOCK RESISTANT — Resilient cushion of rubber, acts as shock absorber, protects cord from stresses.
POWERFUL — Cords are of rayon, firmly twisted, accurately placed, impregnated with rubber to minimize friction.

Cool Running...LONG LIVED!

SUPER-7 V-belts give long, satisfactory service even under bad conditions of load, shock and grit.

Tough, double-wrapped cover bias cut for elasticity and impregnated with rubber. Effectively seals out dust, grit, moisture; takes the wear; keeps the belt in shape; and protects cord structure.

But you get more than good belts when you standardize on *Super-7* V-belts. You also get the benefit of the greatest V-belt experience in the world both in the field and factory. You are assured of exactly the right drive for longest life from the wide variety of types and sizes available.

High Capacity Belts

Where space is limited or other special conditions demand heavier duty, the high capacity belt can be furnished in A, B, C, D, and E sections . . . Extra strong cords, special rubber cushion and tough Neoprene cover give them 40% greater capacity than standard belts at proportionately higher price.

V-Belt Drive Headquarters

Your nearby Allis-Chalmers Authorized Dealer or Sales Office can serve all your V-belt needs, whether they be new or replacement V-belts; standard and variable speed sheaves; or speed changers.

Get your copy of the revised 120 page *Texrope* Pre-Engineered Drive Manual from your A-C Dealer or Sales Office or write for Booklet 20B6956A. Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3291

Texrope and *Super-7* are Allis-Chalmers trademarks.

Sold . . .
Applied . . .
Serviced . . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.

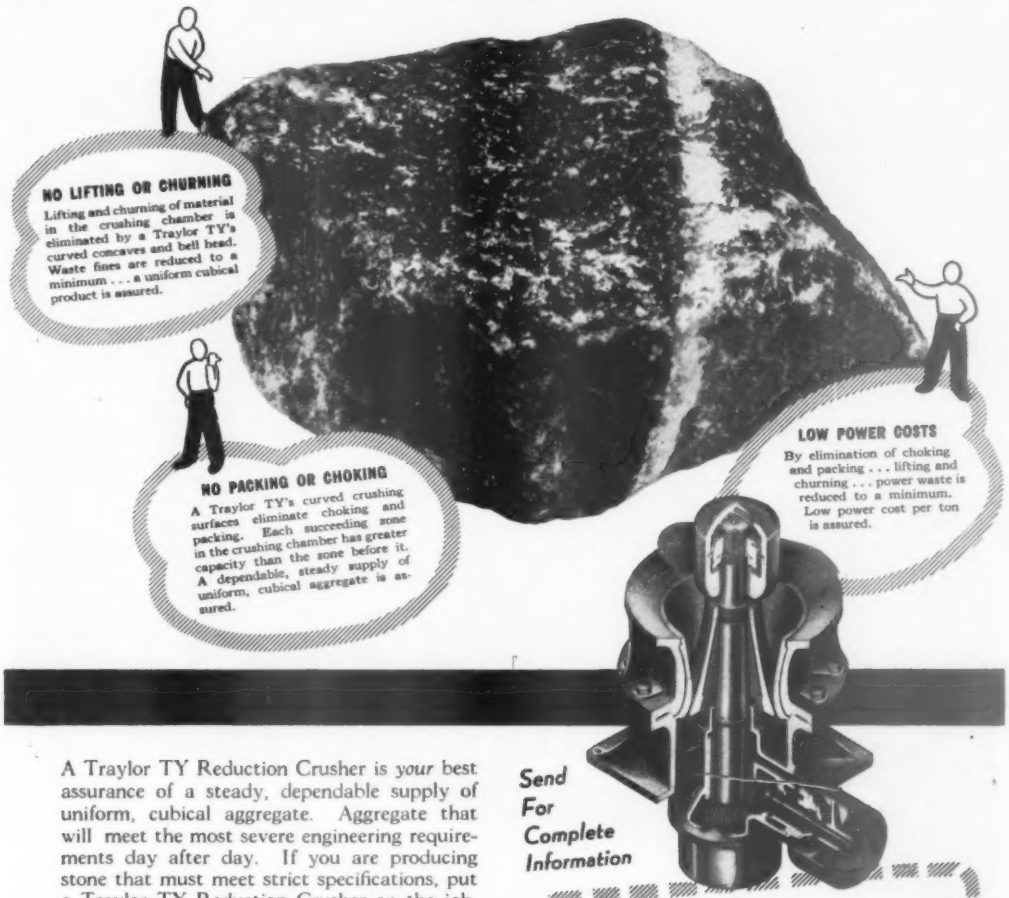
MOTORS — ½ to 25,000 hp and up. All types.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

PUMPS — Integral motor and coupled types from ¾ in. to 72 in. discharge and up.

ALLIS-CHALMERS

A Traylor TY Reduction Crusher produces better aggregate . . . consistently



NO LIFTING OR CHURNING

Lifting and churning of material in the crushing chamber is eliminated by a Traylor TY's curved concaves and bell head. Waste fines are reduced to a minimum . . . a uniform cubical product is assured.

NO PACKING OR CHOKING

A Traylor TY's curved crushing surfaces eliminate choking and packing. Each succeeding zone in the crushing chamber has greater capacity than the zone before it. A dependable, steady supply of uniform, cubical aggregate is assured.

LOW POWER COSTS

By elimination of choking and packing . . . lifting and churning . . . power waste is reduced to a minimum. Low power cost per ton is assured.

A Traylor TY Reduction Crusher is *your* best assurance of a steady, dependable supply of uniform, cubical aggregate. Aggregate that will meet the most severe engineering requirements day after day. If you are producing stone that must meet strict specifications, put a Traylor TY Reduction Crusher on the job. Mail the coupon for free bulletin that gives complete information . . . size . . . and capacities . . . to help you select a Traylor TY to meet your needs.

Send For Complete Information

TRAYLOR ENGINEERING & MANUFACTURING CO.
327 MILL ST., ALLENTOWN, PA.

Looks like a Traylor TY Reduction Crusher is just what I need.

Name _____

Company _____

Address _____

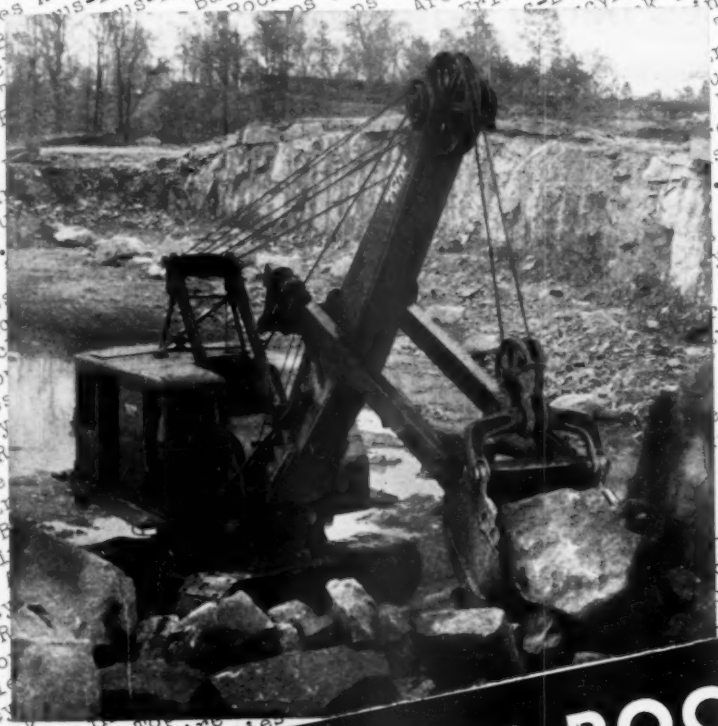
_____

SALES OFFICES: New York, N.Y.; Chicago, Ill., Los Angeles, Calif. Canadian Mfrs: Canadian Vickers, Ltd, Montreal, P.Q.

A "TRAYLOR" LEADS TO GREATER PROFITS

Traylor

Rotary Kilns, Coolers and Dryers · Grinding Mills
Jaw, Reduction and Gyratory Crushers · Crushing Rolls



STAND-OUT IN ROCK

Durability for hard digging shift after shift, year after year — that's a basic reason why more Bucyrus-Eries are used in rock than any other make of excavator. There's plenty of strength for rough work in every part . . . from the ground-gripping treads of heat-treated alloy steel to the heavy-duty rock dipper that combines plate and cast alloy steel in a tough design, with cast manganese steel lip for greater wear-resistance. For steady, reliable, profitable output in rock, make your next shovel a Bucyrus-Erie!

BUCYRUS ERIE

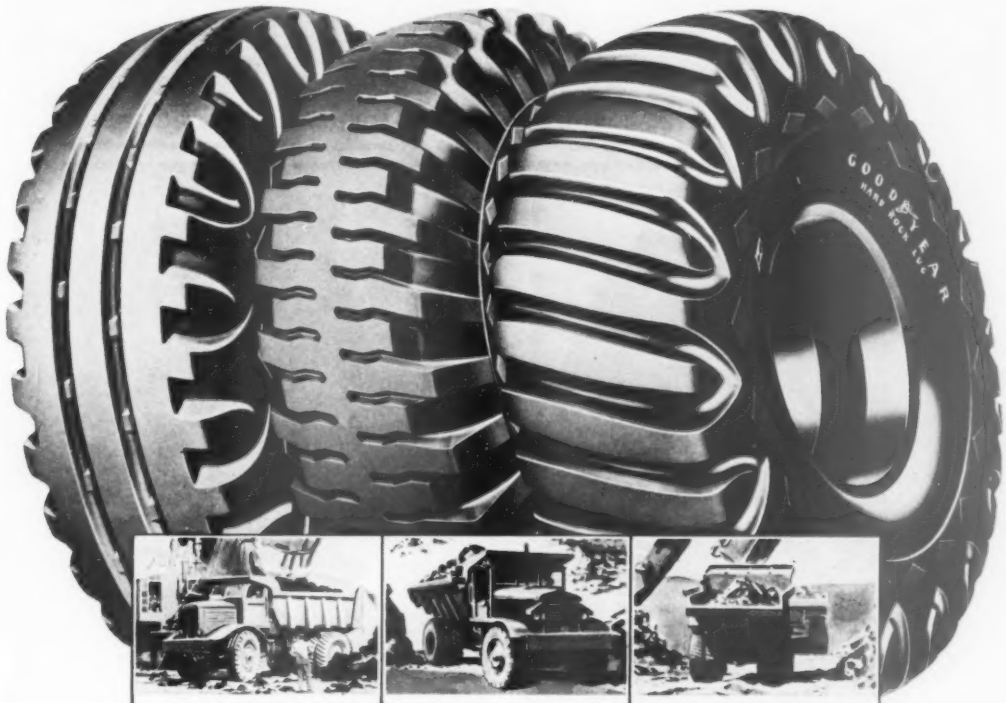
SOUTH MILWAUKEE, WISCONSIN

230ES0

Your profits depend on CPY*

That's why more tons are hauled on Goodyear tires than on any other kind!

* **Cost per yard** determines your profits. Cost-conscious pit and quarry operators depend on Goodyear tires for *lowest* cost per yard. That's because each Goodyear tire is designed to give maximum performance on a particular type of hauling job. Choose the right Goodyear work tire for your job and see how *your* cost per yard is reduced — learn why Goodyear tires are America's First Choice. *It pays to BUY and SPECIFY Goodyear!*



THE HARD ROCK RIB

Companion tire for front wheels in rock work — easier steering, smooth rolling, same cord body, same shoulder and sidewall as Hard Rock Lug.

THE ROAD LUG

Remarkable dual-purpose tire operates both OFF and ON the road. Combines off-the-road toughness and traction with on-the-road mileage and economy.

THE HARD ROCK LUG

Super-tough champ for all types of rock work. Its armored carcass and extra heavy lugs assure more wear, better performance even in toughest going.

GOODYEAR

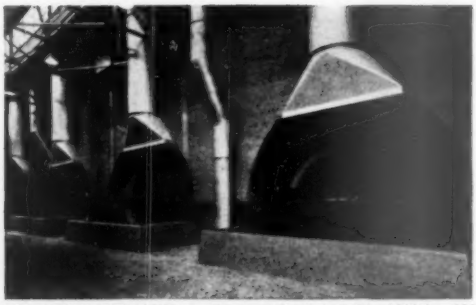
We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network

Road Lug—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

G-E SYNCHRONOUS

SAVE MONEY

SAVE ON OPERATING COSTS . . . Municipal plant gets higher efficiency by continuous operation at constant speed of three 500 horsepower, 1.0 power factor, G-E synchronous motors, each coupled to a centrifugal storm-sewer pump.



SAVE ON INITIAL COST . . . Paper mill selected this 4000 hp, 200 rpm, G-E synchronous motor for driving the montague grinders at low speed. Maximum operating efficiency thus resulted.

MOTORS CUT COSTS

. . . improve performance

IT'S ON THE RECORD . . .

Lower operating costs higher operating efficiency

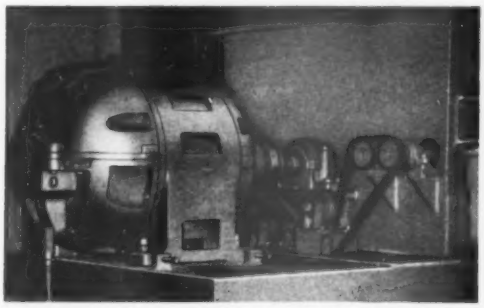
Lower initial cost including control and exciter—for many ratings

Reduced demand and release of needed generating capacity

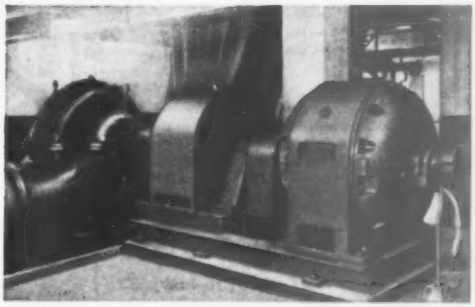
Reduced power rates for improved power factor

For your next large, constant-speed motor, ask your General Electric sales representative to tell you how you can take full advantage of the money-saving features of G-E SYNCHRONOUS MOTORS. Or write for bulletins GEA-5332 (low-speed) or GEA-5426 (high-speed) on your letterhead to *Section 770-22, Apparatus Department, General Electric Company, Schenectady 5, New York.*

GAIN EXTRA PERFORMANCE



DEPENDABILITY . . . Extra protection against physical damage, electrical breakdown, and operating wear and tear makes Tri-Clad® motors highly suitable for sawmill operations. Here is a Tri-Clad synchronous motor rated 300 hp, 1200 rpm, driving an edger in an Oregon sawmill.



LONG LIFE . . . All welded steel-plate stators assure a permanently solid core, and box-type construction means a rigid frame. This 350 hp, 0.8 p.f. G-E synchronous motor, coupled through magnetic clutch, is matched to a fan pump which delivers stock to paper machine.

SIMPLIFY OPERATING PROBLEMS

APPLICATION ENGINEERING . . . Engineers with many years of field experience will tailor synchronous motors to fit your needs. An example is this largest synchronous motor (in horsepower) ever to be applied to drive a reciprocating compressor; G-E motor rated 4500 hp, 300 rpm, driving a Clark gas compressor.

*Reg. U. S. Pat. Off.

SERVICE . . . No matter where your plant is located, you will find General Electric service close at hand. Experienced engineers of our local offices, and trained staffs from our Service Shops are always at your command.

"TOPS" WHEN THE GOING IS TOUGH!

Side bars of high carbon or alloy steel for high strength and durability.

Hardened bushings for strength and long wear. *Locked in the side bars* to confine wear to the full bearing area between hardened pin and bushing.

Side bar holes are pierced, then accurately shaved. This assures full bearing area on pin or bushing . . . accurate pitch . . . precisely parallel holes.

3-diameter pins assure easy, safe assembly and disassembly . . . are press fits in side bars only. Pins are of case-hardened, forged alloy steel, accurately milled to provide proper clearance between pin and barrel. *Pins are locked against rotation in side bar.*

other Rex equipment that's built to last

Rex Lay Bushed Chains
For general elevator service under severe abrasive conditions.

Rex Combination Chains
For general elevator service where speeds and loads are moderate.

Rex Style "A" Bucket
For general service

Rex Style "AA" Bucket
For heavier, more abrasive material.

Rex Tomporim Sprocket
For extra long sprocket life.

Rex Chabelco all heat-treated steel elevator chains are the ultimate where service is rough and tough! There is good reason why these all steel elevator chains last longer . . . handle more tonnage per chain dollar. It's the accurate pitch that means smooth sprocket action . . . the precision-built, heat-treated parts pressed together to stay that make **Rex Chabelco** outstanding for severe bucket elevator service.

The pins, bushings and side bars are firmly fixed. They just can't come loose, begin to wobble and cause unnecessary chain wear. Compare the "fit" of **Rex Chabelco** parts with that of any other similar chain. You'll notice at once the accurate, snug assembly that makes **Chabelco** the leader.

These *all steel* chains cost only slightly more than malleable iron chains. Get more information on how they can make your bucket elevator dollars go further. Write to **CHAIN BELT COMPANY, 1649 West Bruce Street, Milwaukee 4, Wisconsin.**

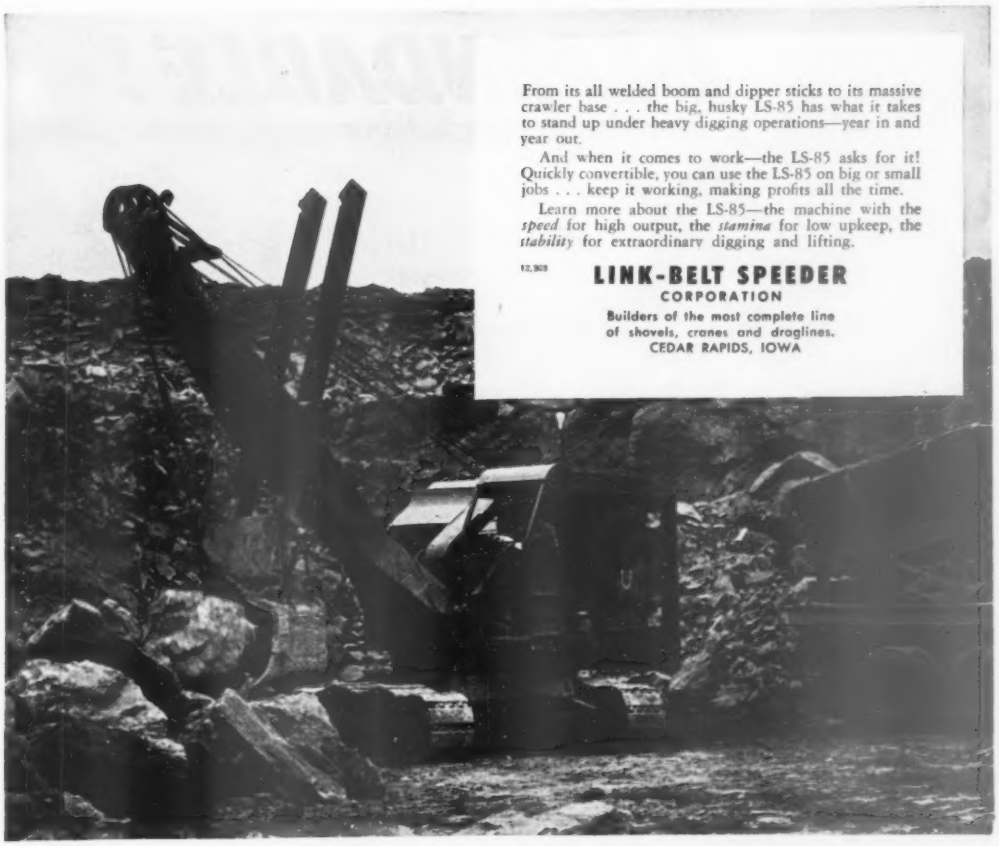
CHAIN BELT REX COMPANY

DRIVE AND CONVEYOR CHAINS

Here's why operators call the LS-85 the

SUPER 3/4 YD. SHOVEL-CRANE!

- Heavy-duty, all-welded construction..
- Designed to assure short, positive turns in steering
- Wide, long frame for ground-hugging stability
- 13" ground clearance — nothing to snag or foul..
- Fully convertible for all attachments
- Service and repair parts stocked by your local distributor



From its all welded boom and dipper sticks to its massive crawler base . . . the big, husky LS-85 has what it takes to stand up under heavy digging operations—year in and year out.

And when it comes to work—the LS-85 asks for it! Quickly convertible, you can use the LS-85 on big or small jobs . . . keep it working, making profits all the time.

Learn more about the LS-85—the machine with the *speed* for high output, the *stamina* for low upkeep, the *stability* for extraordinary digging and lifting.

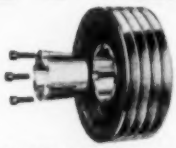
12,303

LINK-BELT SPEEDER
CORPORATION
Builders of the most complete line of shovels, cranes and draglines.
CEDAR RAPIDS, IOWA

LINK-BELT SPEEDER
CORPORATION

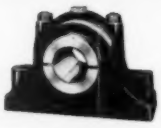
Builders of the most complete line of cranes, shovels and draglines
CEDAR RAPIDS, IOWA

IF IT'S DODGE -IT'S DEPENDABLE!

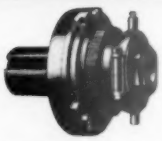


TAPER-LOCK SHEAVES: A Dodge "first." Patented. (Taper-Lock is the world's simplest mechanism for mounting wheels to shafts.) 476 stock sizes in A, B, C and D grooves.

TORQUE-ARM SPEED REDUCERS: America's most complete line of shaft mounted speed reducers. Capacities from 1 to 27 h.p. Output speeds from 12 to 330 r.p.m.



DODGE-TIMKEN BEARINGS: Another Dodge "first." Mounted units, proved in millions of industry's toughest jobs. Four types to choose from. Shaft sizes from 1-3/16" to 8".



ROLLING GRIP FRICTION CLUTCHES: Another Dodge "first." No toggles. Flexible, smooth. Bolted plate and gear tooth plate. 1.3 to 21.2 h.p. at 100 r.p.m.

SLEEVOIL BEARINGS: Another Dodge "first." Precision-built, quiet, dependable — "tops" for fan and blower service. Sizes 1-7/16" to 8" in both plain and water cooled types.

SOLID STEEL CONVEYOR PULLEYS: Maximum strength, minimum weight. *Modern* pulleys with interchangeable hubs that cut installation cost. Diameters 6" to 8". All face widths.

DODGE V-BELTS: Concave sidewall design. High-strength cord section. Factory measured to insure matched drives with Dodge precision-built sheaves —for dependable performance.

DODGE TAKE-UPS: Modern, rugged, dependable. Roller bearing (illustrated), ball bearing and babbitted. Shaft sizes from 3/4" to 4". Travel from 4" to 36".

SPECIALISTS IN POWER TRANSMISSION MACHINERY FOR 73 YEARS

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NOTED THROUGHOUT THE WORLD FOR HIGH QUALITY, PRECISION MANUFACTURE

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MANUFACTURERS OF A BROAD LINE OF MECHANICAL POWER TRANSMISSION MACHINERY

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ORIGINATORS OF NEW AND BETTER PRODUCTS FOR THE MECHANICAL TRANSMISSION OF POWER

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USED CONFIDENTLY WHERE THE GOING IS TOUGHEST

DODGE MANUFACTURING CORPORATION, 2600 Union St., Mishawaka, Ind.

CALL THE TRANSMISSIONEER: Most Dodge products are normally available from distributors' stocks — in your territory — when you need them. For information on the newest and best methods of mechanical power transmission, call the Dodge Transmissioneer, graduate of the Dodge factory course. He is your local Dodge Distributor. Look for his name under "Power Transmission Equipment" in your local classified telephone directory.

PILLOW BLOCKS: Roller Bearing, Ball Bearing, Babbitted. **FLANGE BEARINGS:** Roller, Ball, Babbitted. **HANGER BEARINGS:** Roller, Ball, Babbitted. **TAKE-UPS:** Roller Bearing, Ball Bearing, Babbitted. **BASE PLATES. FLOOR STANDS. DROP HANGERS. V-BELT SHEAVES:** Both TAPER-LOCK and Bored-to-Shaft-Size. **BELTS:** Industrial and FHP V-Belts and Flex-Link Belting. **SPEED REDUCERS:** TORQUE-ARM Shaft Mounted Speed Reducers. **CLUTCHES, FRICTION:** Rolling Grip, Diamond D and Solid Types. **COUPLINGS:** TAPER-LOCK Flexible, TAPER-LOCK Rigid and Flange Types. **SAFETY SET COLLARS. PULLEYS:** Steel Split Transmission and Solid Steel Conveyor Pulleys. Rubber Lagging. **VISES:** SLIDE-SET Machinist's...FOR COMPLETE LINE, TYPES AND SIZES, WRITE FOR BULLETINS AND 224-PAGE CATALOG.

DODGE

of Mishawaka, Ind.

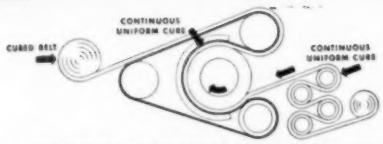
"First in Power Transmission Machinery!"

OCS*

It's there even when you don't see it

...this Achilles Heel of Conventional Belts

ROTOCURE eliminates this common cause of Failure



SKETCH OF EXCLUSIVE ROTOCURE PROCESS

Although they often can't be detected with the naked eye, overcured segments or "Achilles' Heels" are present every 30 to 40 feet in belts cured by the flat press method. They occur because the vulcanization is *not* continuous due to overlapping. These press overlaps of 2" to 4" across the entire width of the belt get a double dose of curing. These segments make for costly operational weaknesses on the job and may result in early and complete failure of the belt.

* "Overcured Sections"—present every 30' to 40' in all belts made by the flat press method. Only Rotocuring eliminates this basic cause of belt failure.

BWH ROTOCURED belts are made differently — the *only* belts constructed by a continuous, endless curing process. Because press overlapping can't happen, overcuring is eliminated and flex life is improved by as much as 40%. Rotocure also eliminates mechanical distortion at the press ends . . . provides constant, uniform stretch . . . assures uniform abrasion resistant covers because one vulcanization and *only one* takes place. The end result is a better belt the first day you put it on . . . a more trouble-free belt day after day — a belt with MORE working days built into it! Ask your BWH distributor or write us direct.

Another Quality Product of

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BWH

DEPENDABLE RUGGEDNESS

WIRE ROPE

For better performance on quarry excavating equipment it's ROEBLING rope

FOR EASY HANDLING, extra toughness and service life, there's nothing like Roebling Preformed "Blue Center" Steel Wire Rope. "Blue Center" steel—made only by Roebling—gives rope top resistance to abrasion and fatigue. And Roebling Preforming gives you a rope that spools better... doesn't tend to set or kink... minimizes vibration and whipping.

There is a Roebling wire rope of the right construction, grade and size for every type and make of rope-rigged equipment. Have your Roebling Field man help choose the rope that will give you the best and the lowest-cost performance. Still further savings may be effected by following his suggestions about the proper installation, use and maintenance of wire rope. John A. Roebling's Sons Company, Trenton 2, New Jersey.

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Atlanta, 934 Avon Ave ★ ***Cambridge,*** 31 Carleton St ★ ***Chicago,*** 5525 W. Roosevelt Rd ★ ***Cincinnati,*** 3253 Fredonia Ave ★ ***Cleveland,*** 701 St. Clair Ave, N.E. ★ ***Denver,*** 4801 Jackson St ★ ***Houston,*** 6216 Navigation Blvd ★ ***Los Angeles,*** 216 S. Alameda St ★ ***New York,*** 19 Rector St ★ ***Odessa, Texas,*** 1920 E. 2nd St ★ ***Philadelphia,*** 230 Vine St ★ ***San Francisco,*** 1740 17th St ★ ***Seattle,*** 900 1st Ave, S. ★ ***Tulsa,*** 321 N. Cheyenne St

When you're racing time...

that Pioneer Edge

Job Facts

Entire quarry plant used by Sargent was engineered, designed and built by Pioneer. It consists of a primary unit with a 30"x42" jaw crusher and a 42"x14' apron feeder; a 40" x 22" triple roll crusher; a 4'x10' three deck vibrating screen; two 20 yard bins and 95' of conveyor.

To maintain an average of 1300 tons per day for the job described, there were several days when over 1600 tons was produced. Crushed stone base was placed in two courses . . . the first, dust or sand bound . . . the second, penetrated with one gallon per square yard of 85-100 penetration asphalt.

BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

Pioneer

Continuflo EQUIPMENT

will help you win

Helps contractor make up for late start on Vassalboro-Winslow Project

LOST TIME often *can be* regained . . . when you have Pioneer equipment to help you out! H. E. Sargent, Stillwater, Maine, had from June 20 to August 16 to prepare the base for 9.14 miles of roadway. This required 37,000 tons of crushed stone, 42,000 cubic yards of gravel. It meant a crushing job averaging 1300 tons a day . . . producing four sizes of stone. This job was done and done on schedule . . . despite a late start and heavy traffic and dust conditions . . . through the use of Pioneer equipment.

Pioneer plants have the built-in ruggedness and extra capacity that respond to the needs of the job and the hands of the good operator.

HAVE THAT

Pioneer Edge

WHEN YOU BID

Who gets the job when bidding is close? The operator who can get the most in production per hour, per dollar, per machine, per man. Have that Pioneer Edge on your side! Send coupon for more facts and figures.

PIONEER ENGINEERING WORKS

1515 Central Avenue • Minneapolis 13, Minnesota

● Please send me information on the equipment checked.

☐ GRAVEL PLANTS	☐ WASHING PLANTS	☐ MECHANICAL FEEDERS
☐ ROCK PLANTS	☐ BITUMINOUS PLANTS	☐ VIBRATING SCREENS
☐ JAW CRUSHERS	☐ APRON FEEDERS	☐ BUZZER SCREENS (LIGHT DUTY)
☐ ROLL CRUSHERS	☐ ORO FEEDERS	☐ CONTINUFLO CONVEYORS

*Name*_____

*Company*_____

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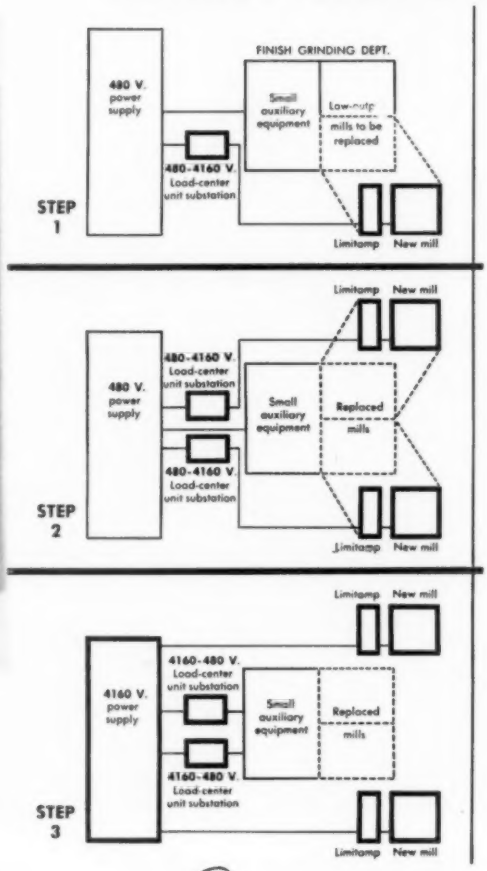
Now—MODERNIZE *without complete shutdown!*

CHANGE TO HIGH VOLTAGE—*step by step!*



Essential to cement-plant expansion tomorrow as well as today, electrical modernization calls for distributing power at high voltage direct to large equipment, and also to load-center unit substations where it is stepped down for small auxiliary equipment. For example, in finish grinding, here's one way many cement plants are modernizing with a minimum of production delay.

1. Replace a group of old, low-production, low-voltage mills with a new high-output mill driven by a high-voltage synchronous motor with limitamp control. Connect in reverse a load center unit substation so that the existing 480-volt supply is stepped *up* to 4160 volts for the new motor, placing the new mill in operation. The rest of the department continues to operate as before.

2. Similarly, other new high-voltage units are then added, one at a time. All equipment continues to operate from the 480-volt supply.

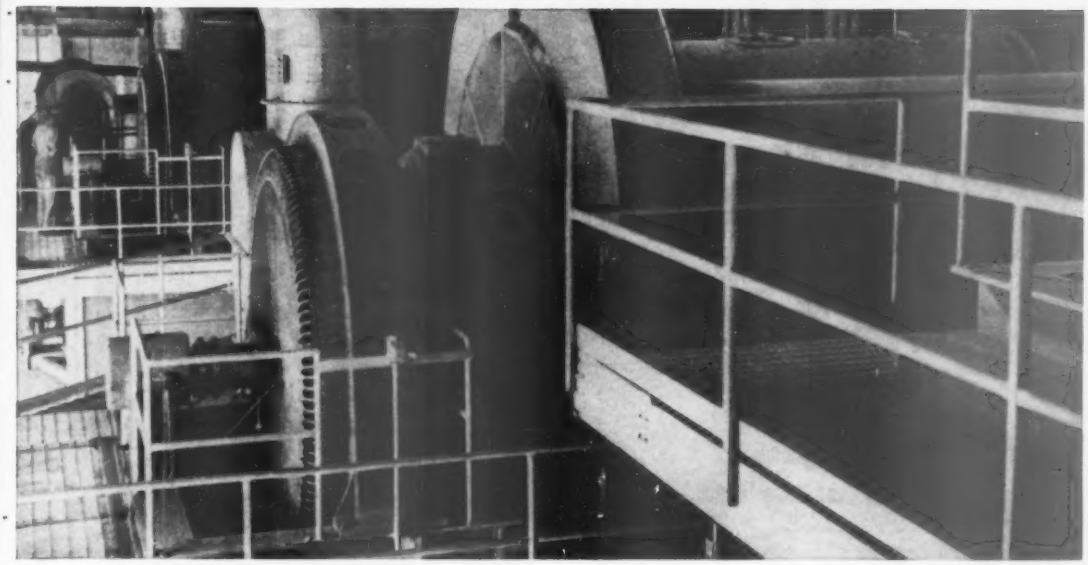
3. Replace low-voltage with high-voltage power supply by making the necessary changes at the main plant substation and in the distribution lines. (In some cases, generators used for local power will be rewound one at a time.) Connect the newly available high-voltage power direct to limitamp controllers and the high-output mills. Then reverse the load-center unit substations so that they now step *down* high-voltage to low-voltage power for small auxiliary equipment.

You can put your confidence in—

GENERAL ELECTRIC

658-5

ELECTRICALLY

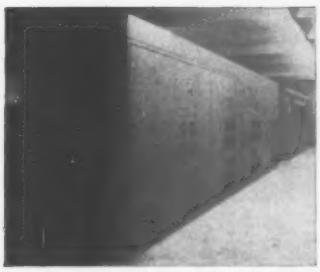


Increased cement production is provided by replacing several small, low-output mills with one large modern mill driven by a G-E high-voltage synchronous motor. G-E synchronous motors, high in operating efficiency for driving constant-speed cement-plant machinery, need only minimum maintenance, maintain exact speed, improve over-all plant power factor. The two G-E 1000-hp, 180 rpm, 4160-volt synchronous motors shown are driving clinker-pulverizing ball mills in the finishing department of a large Western cement plant, electrically modernized for greater output.

SIMPLIFY THE CHANGE—*with co-ordinated G-E units!*

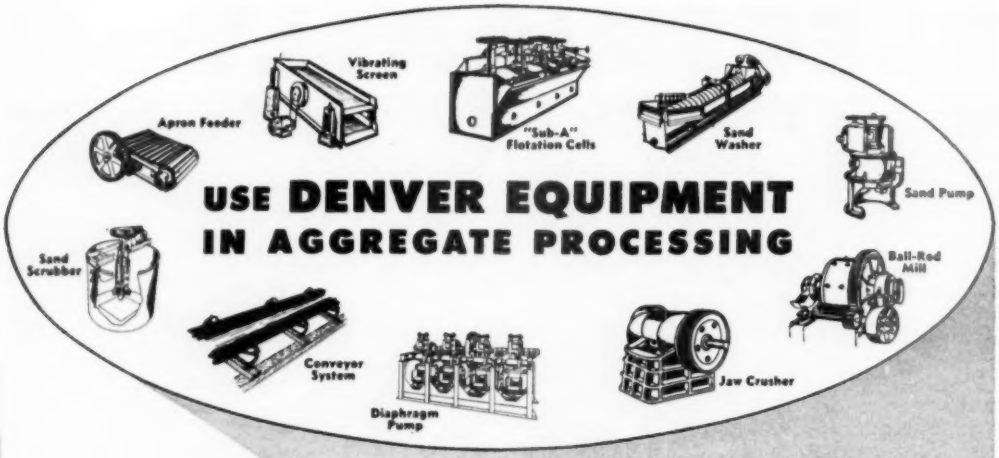
Time-and-cost-saving way to bring in purchased power to your plant is through a G-E master unit substation. All components are fully co-ordinated and metal-enclosed for personnel protection. Their flexibility makes these compact, space-saving units applicable to practically any cement-plant arrangement. The G-E master unit substation shown is 3750 kva, 66,000-4160 volts.

Complete and easy to specify, G-E load-center unit substations are assembled and wired for quick, easy installation. Standardized "building-block" design permits lower unit cost plus flexibility of arrangement to simplify plant modernization. The 1000-kva G-E unit shown supplies power to auxiliary motors in the kiln department of an electrically modernized Eastern plant.



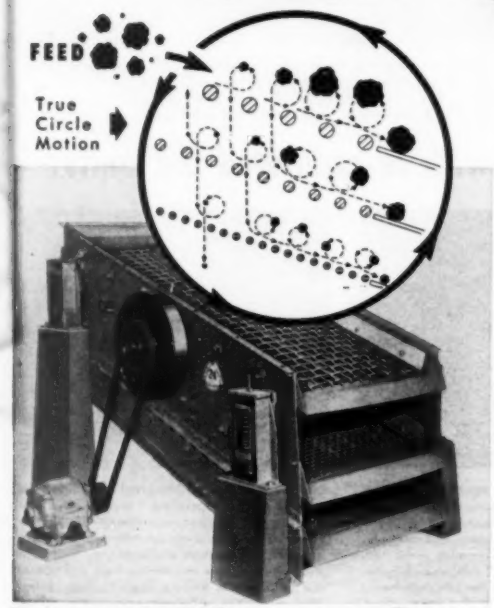
Effective centralized control of high-voltage motors—plus sure short-circuit protection—is provided by G-E limitamp controllers which receive power direct from a master unit substation. Co-ordinated components are factory-assembled in steel cubicles, save installation time and space. The units in this modern cement plant control 1000- and 500-hp 4160-volt synchronous motors.

NOW IS THE TIME—when you are in the planning stage for modernizing your cement plant—to call in a G-E specialist to study your plant's individual needs, help you develop a plan for purchasing and modernizing on an easy, step-by-step basis. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*



less fines in classified aggregate by using the

DENVER · DILLON Vibrating Screens



Better Cleaning . . . Less Penalty . . . More Profit. Material literally comes straight down hundreds of times over the complete area of the fully activated screen so that every particle of undersize passes through the screen. Result is a minimum of undersize in every sized product.

Circle Throw Eccentric More than Vibrates the Screen. The true circle motion lifts each particle up, back and directly down onto the screen cloth. Material more than flows across the screen . . . hundreds of times it moves up, back and down so that every particle of undersize passes through.

Result . . . a cleaner product . . . less penalty . . . more profit.

With the Denver Dillon Screen *you also get . . . Two Bearing Suspension . . . Fifty Percent Less Horsepower Consumption . . . Minimum Maintenance . . . No Blinding of Screen Cloth . . . and many other features.*

Want more information on this super screen?

Write today for Bulletin S3-B5, giving us some idea of your screening problem. You will receive a prompt reply and a solution.

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DENVER EQUIPMENT 24 HOUR SERVICE COMPANY

"The firm that makes its friends happier, healthier and wealthier"

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DENVER EQUIPMENT COMPANY, 1410 17th St., Denver 17, Colorado

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KNOW...

Chrysler Industrial 7—one of eight basic models.

HIGHER SPEEDS

MEAN BETTER PERFORMANCE AND LOWER COSTS!

For years, operators of gasoline powered industrial equipment, and the engineers who design it, have known that higher speed engines deliver better performance.

Now Chrysler has proved that you can have all the advantages of higher speed—and *lower costs, too.*

Continuous Chrysler research in higher alloy steels and famed Chrysler engineering have produced an industrial engine that runs faster and lasts longer. An engine that *costs less to buy and less to operate!*

A letter of inquiry will bring an engineer to your desk, well qualified to discuss application to your equipment. Address

Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan.

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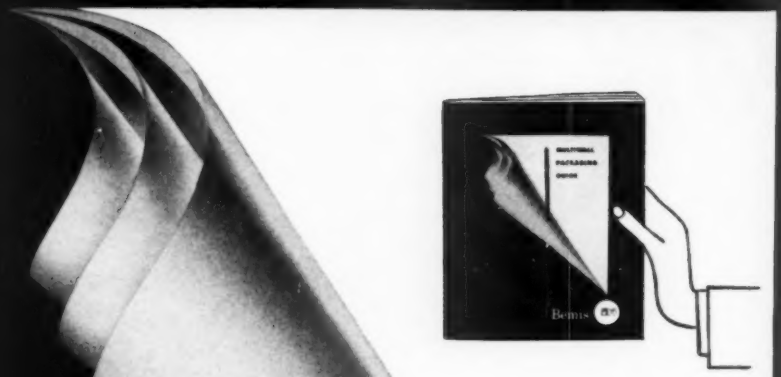

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. . . it shows how to do a more efficient packaging and handling job and save materials and labor. Deals with Storage of Empty Bags, Filling and Closing, Handling of Filled Bags, Palletizing and other important topics. Ask your Bemis Man or write to the nearest Bemis office. No cost to you, of course.

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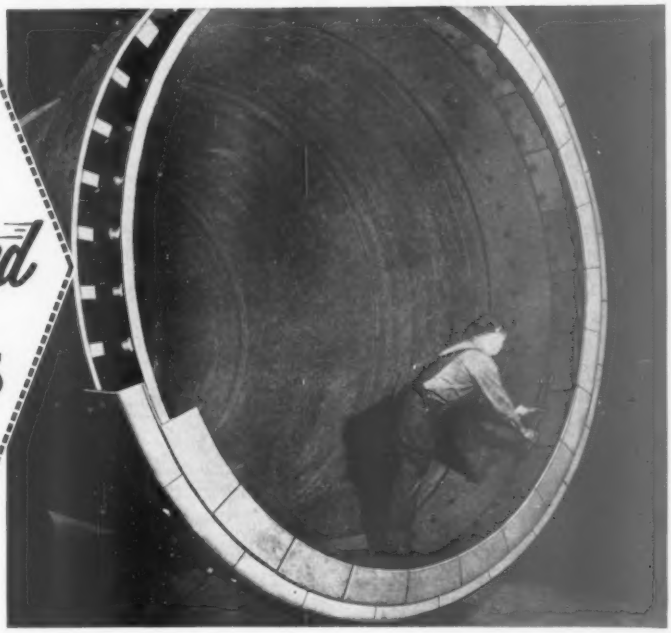
NO SHUTDOWNS
for End Brick Replacement!

WITH THIS
ALLIS-CHALMERS
Air-Cooled End
FOR
ROTARY KILNS



GET RID of nose brick troubles for good with the Allis-Chalmers air-cooled kiln end shown above. The segmental alloy steel retaining ring forms a channel through which a blast of cooling air is forced.

Result: No kiln warpage; refractory brick lasts as long at discharge end as at any point along the kiln.

This one feature alone will, during the working life of the kiln, *pay for itself several times over* in reduced downtime and increased production . . . in lower refractory costs and longer kiln life.

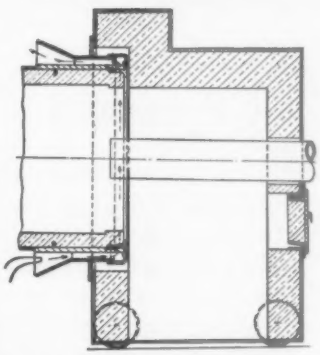
Air-cooled kiln end design makes possible the use of a more positive air seal, resulting in fuel savings.

Other important features of Allis-Chalmers rotary kilns:

- **Extra thick shell at discharge end and under riding rings.**
- **Centralized instrument control of the entire operation.**
- **Modern heat recuperation equipment. Constant delivery feeders and all auxiliary kiln equipment.**

Get more facts from the A-C representative in your area, or write for Bulletin 07B6368. Allis-Chalmers, Milwaukee 1, Wisconsin. A-3281

Texrope is an Allis-Chalmers trademark.



Sketch shows arrangement of movable firing hood with air-cooled kiln end.

ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

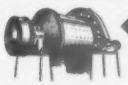
Motors

Controls

Texrope Drives

Vibrating Screens

Crushers



Grinding Mills

Bowling 'em over
AT BOWLING GREEN

POWER FOR GENERATOR is supplied by International UD-18A in left foreground, while its twin brother powers the primary crusher.

THE SECONDARY CRUSHER gets its power from a third UD-18A shown in right background.

Gary Brothers, Bowling Green, Kentucky, turn out 100 tons of crushed rock per hour, helped by three International UD-18A's

When Gary Brothers planned and equipped their new mill near Bowling Green, Kentucky, they went a hundred per cent International for cost-cutting economy and long-lasting dependability.

Now they're bowling 'em over with production —100 tons of crushed rock per hour.

International UD-18A's power the generator, the primary crusher, and the secondary crusher.

Gary Brothers also operate a shovel and compressor, both International-powered, and their trucks are Internationals, too.

You can't beat International Power for real performance on your operation. Let your International Industrial Distributor or Power Unit Dealer prove it to you.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.

INTERNATIONAL **POWER THAT PAYS**

NOW, *it costs* LESS *to do your jobs* BETTER!

In every one of these operations, materials are being moved and handled for less—thanks to the continuous, cost-cutting performance of the P&H.

Of the many P&H Added Values, these alone will account for important savings for you. Add all the others and you know why so many operators, mindful of today's changing conditions, are putting P&H Excavators in their pits and yards.

HYDRAULIC CONTROL — years-ahead engineering makes P&H's faster and simpler to operate with a velvety action that's easier on man and machine.

PLANETARY CHAIN CROWD — P&H pioneered it; made it more accurate, more rapid reversing. Outlasts 25 to 30 crowd cables.

TRUE TRACTOR TYPE CRAWLERS—smoother, more maneuverable and dependable travel; easier steering; ends usual crawler troubles.

WELDED CONSTRUCTION THROUGHOUT — rolled alloy steels make them huskier, shockproof; no needless deadweight.

P&H DUAL-POWERED TRUCK CRANES. One engine right for faster travel, another with power right for faster working. Converts for all classes of work. Available with P&H Remote Control.

P&H CRAWLER EXCAVATORS. Built in all sizes up to 6 cu. yds.; gasoline, Diesel or electric powered. Write for literature.

Get the full story on P&H Added Values. Mail coupon on your business letterhead now!

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HARNISCHFEGER CORPORATION, *Excavator Division*
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Send complete information covering P&H models from_____to_____cubic yards.
( ) Also P&H Truck Cranes. I am attaching coupon to my business letterhead.

Name .....

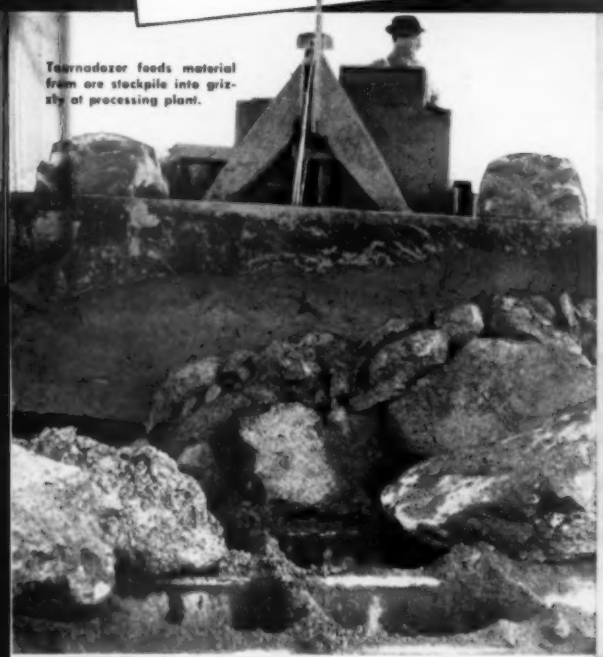
Company ..... Position .....

Address .....

City ..... Zone ..... State .....

Arkansas Aluminum Plant on 5 JOBS with

1. Dozes bauxite ore into grizzly
2. Pulls gyp wagon, plant to dump
3. Spreads waste material at dump
4. Maintains quarry rock stockpile
5. Cleans around two 2½ yd. shovels



Tournadozer feeds material from ore stockpile into grizzly at processing plant.

Near Little Rock, Arkansas,

a large Eastern manufacturing firm operates an ore pit and processing plant 24 hours a day. They are mining bauxite rock, which must be crushed, then processed to recover aluminum ore. On this multi-handling operation, they have the problem of doing a lot of widely-scattered dozer jobs within very short periods of time . . . and have found the answer in a 19 m.p.h., rubber-tired C Tournadozer. "This *one* LeTourneau machine has been doing the work of *two* crawlers on our operation," reports the Plant Superintendent.

Tournadozer's principal job during its regular 12-hour work schedule is dozing quarry rock into 4 to 8 grizzlies. It utilizes the previous waiting periods to handle waste disposal . . . pulling a 13-yd. bottom-dump wagon ⅓ mile from gyp conveyor to dump area . . . spreading the material . . . then returning ½ mile to conveyor, where wagon is uncoupled and reloaded while Tournadozer "lends a hand" on other odd-lot, maintenance-type jobs.

Mail to: R. G. LeTOURNEAU, INC., Peoria, Illinois

LeTOURNEAU LET EQUIPMENT

NAME.....

TITLE.....

COMPANY.....

STREET.....

CITY, STATE.....

Please send information on

- ☐ 180 h.p., 19 m.p.h. C Tournadozer
- ☐ 122 h.p., 19 m.p.h. D Tournadozer

for use with:

- ☐ Bulldozer
- ☐ Carryall
- ☐ Angledozer
- ☐ Rooter
- ☐ Snow Plow
- ☐ Other Drawn Equipment
- ☐ Side Crane

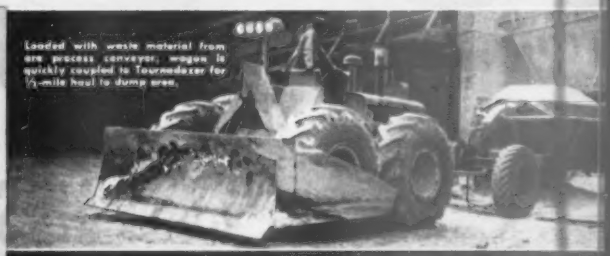
doubles crawler output
C TOURNADOZER

Dozing over end of dump, big 4-wheel air brakes stop Tournadozer instantly . . . operator simply moves gear selector lever to get high-speed reverse which cuts "deadhead" return time to a minimum.

In addition, Tournadozer is on call 24 hours a day to level quarry rock stockpile . . . and to clean around 2 electric 2½-yd. shovels working inside storage sheds. In an average 24-hour period, the "C" travels between 30 and 35 miles, part of the distance over pavement, part cross-country . . . crosses railroad tracks and curbs without planking . . . works frequently on concrete without damage to surface or to tires.

On all five of these major dozing and pulling assignments, the versatile Tournadozer consistently outproduces crawler-type tractors. Its fast, "runabout" ability has helped maintain steady, balanced production of pit and plant at all times.

With Tournadozer's 19 m.p.h. forward and 8 m.p.h. reverse speeds, you, too, can do more jobs, and get more work done at a lower cost per job. Let your LeTourneau Distributor show you more job-proved facts and figures. Why not write, or call him . . . TODAY!



Loaded with waste material from ore process conveyor, wagon is quickly coupled to Tournadozer for ½-mile haul to dump area.

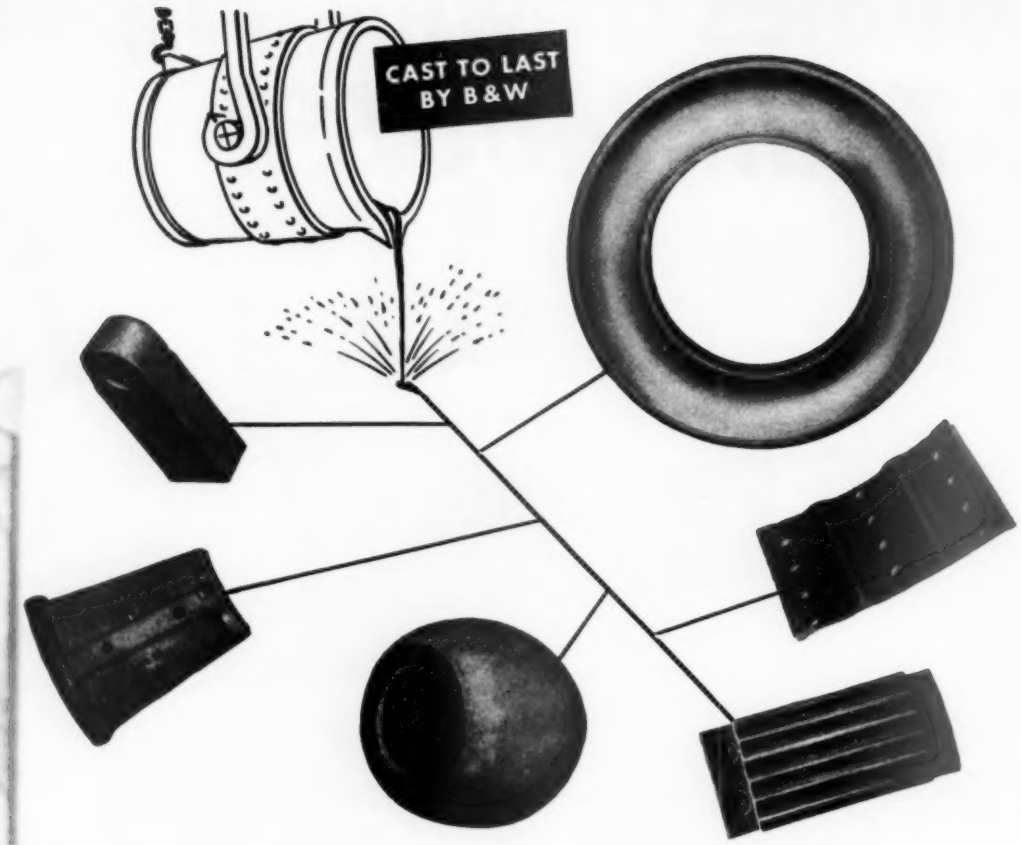
Tournadozer's 4-wheel drive on giant 21.00 x 25 tires gives rig plenty of power for pulling the 13-yd. wagon.

As waste material is dumped, high-speed C Tournadozer spreads previous load with its electric-control 2½-yd. bulldozer blade

Tournadozer, Angledozer, Carryall, Rooter—Trademark Reg. U.S. Pat. Off. M27

LETOURNEAU PEORIA, ILLINOIS — JOB-PROVED The World Over — **TOURNADOZERS**

IT'S RUBBER THAT PUTS THE ACTION IN TRACTION



Service-proved AIDS to low-cost grinding

B&W chilled iron and alloy steel wear-resistant castings have a long and favorable service record as vital parts of widely-used types of grinding equipment. Because they are CAST TO LAST under all kinds of abrasive conditions encountered in rock products plants, liners, roll heads, slugger plates and other B&W wear metal castings keep grinding and crushing equipment on the job . . . prevent unscheduled shutdowns for costly, time-consuming repairs and replacements. Secret of their superlative service life is the unique properties of B&W Elverite A and Elverite C chilled irons, and B&W Steel Alloy 5202. Each has distinct advantages for specific operating requirements of strength and abrasion resistance. Let B&W pour longer life into your next order of wear-resistant castings for new equipment or renewals. Chances are our large pattern stock includes your designs.

BABCOCK & WILCOX

S-387

Scalping-Crushing

COLONIAL Stone and Sand Co., Inc. *uses*

Washing-Sizing

TELSMITH®

TELSMITH Equipment in this Plant

Two 4' x 12' Two-Deck Pulsator Scalping Screens

Two 48" Gyrasphere Crushers

Eight 4' x 10' One-Deck Vibro-King Dry Screens

Three 4' x 14' Two-Deck Vibro-King Wet Screens

Three 60" x 9' Super Scrubbers

Six 4' x 12' One-Deck Vibro-King Wet Screens

Nineteen 24" x 15" Special Tunnel Gates

Fourteen Field and Plant Conveyors—18", 24", 36", 42" wide; total length about 3000'

● COLONIAL of NEW YORK CITY and LONG ISLAND own and operate this modern all-steel sand and gravel plant. Designed in close co-operation with Telsmith engineers, plant layout and machinery is of the latest type, properly co-ordinated and balanced for flexibility and capacity, with interlocking features to assure smooth, trouble-free operation.

Production averages about 600 cu. yds. per hr., making four kinds of material: minus 1¼" plus ¼" crushed and uncrushed gravel mixed, minus ¼" plus ⅛" grits, minus ⅛" sand, all washed; and minus ⅛" dry sand. Most of the material is loaded into barges for shipment to New York. A truck-loading plant handles local demands.

In Scalping-Crushing Unit, two 2-deck Pulsators are in closed circuit with two 48" Gyrasphere Crushers which reduce all gravel to minus 1¼". In the Dry Screening Plant eight special Vibro-King Dry Screens produce the dry sand. Washing-Sizing Unit has two batteries of Vibro-King Screens—two-deckers ahead, with single-deckers following the Super Scrubbers. Get Bulletin 266 describing Telsmith Complete Plant Service.

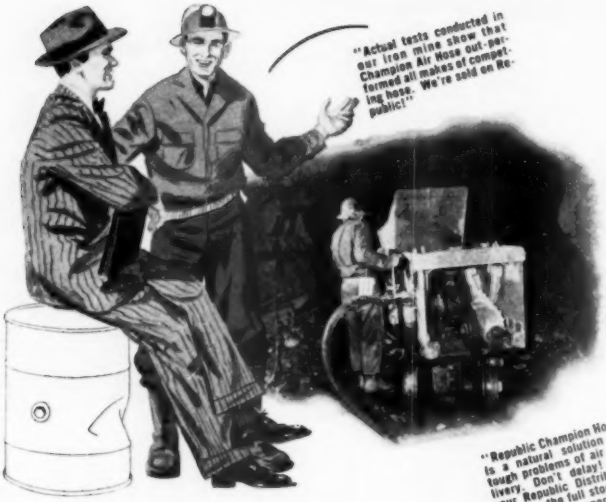
G-18

SMITH ENGINEERING WORKS, 503 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Address: Seagworks, Milwaukee

51 East 42nd St. New York 17 — 211 W. Wacker Dr. Chicago 6, Ill. — 713 Commercial Trust Bldg. Philadelphia 2, Pa. — 238 Main St. Cambridge 42, Mass. — A. N. Wigle Columbus 13, Ohio

Rish Equipment Co. Charleston 22, S.C. & Clarksburg, W.Va. — Rish Equipment Co. Roanoke 7, & Richmond 10, Va. — Wilson-Wessner-Wilkinson Co. Knoxville 8, & Nashville 6, Tenn.



"Actual tests conducted in our iron mine show that Champion Air Hose out-performed all makes of competing hose. We're sold on Republic!"

An oil-resistant Neoprene tube, a rubber-insulated, premium high-tensile braided carcass and a resilient yellow safety cover make Champion Air Hose the toughest product of its class anywhere in the world.

"Republic Champion Hose is a natural solution to tough problems of air delivery. Don't delay! Let your Republic Distributor give you the full story today. His free, expert recommendations save you money."

Try Republic First...

CHAMPION CALIBRE AIR HOSE

Equip with Republic's Champion All-Service Air Hose and you're set for a good long period of trouble-free operation. *And that goes for any job no matter how tough!*

Republic's Champion Air Hose is colored yellow for safer visibility. It's specially fabricated for added strength and flexibility without any increase in over-all hose weight.

Champion Hose is another great achievement produced by Republic, *specialists in industrial rubber products for a half century.* Contact your local Republic Distributor or write direct for full facts.

INDUSTRIAL RUBBER PRODUCTS BY

REPUBLIC RUBBER DIVISION

Lee Rubber & Tire Corporation

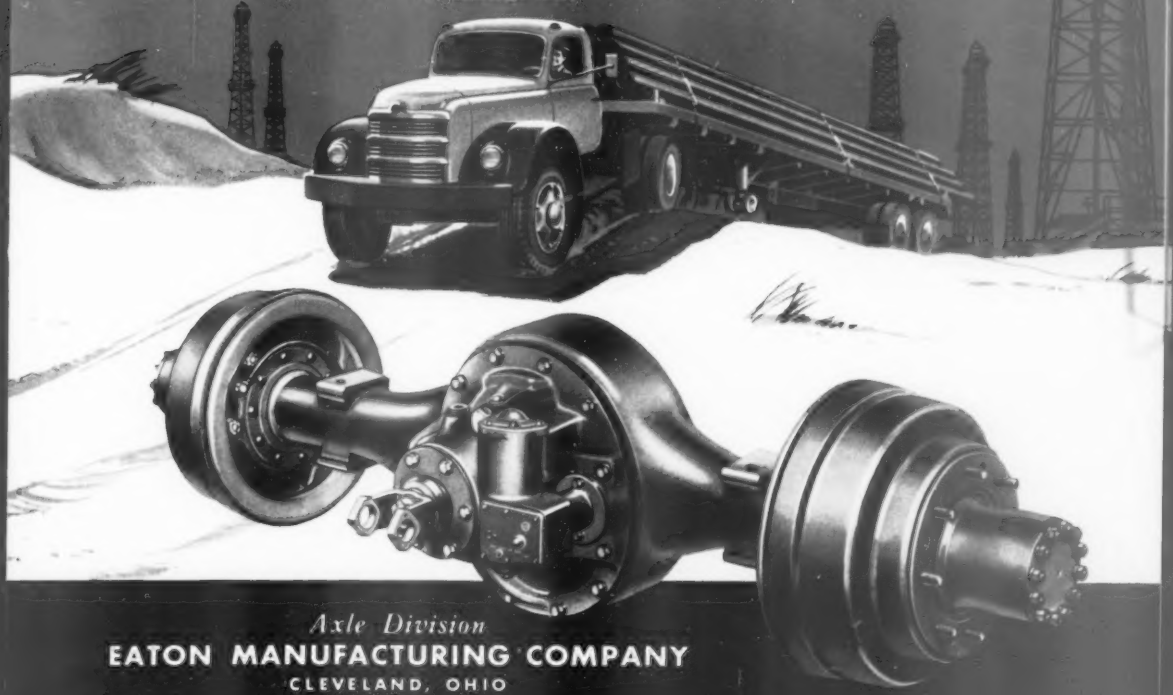
YOUNGSTOWN, OHIO

"Most compressors spit oil and heat into air lines. Provide a short detachable lead or periodically turn hose end for end (A to B, B to A) and you'll deter concentrated buildups of these destructive agents and greatly increase hose life."

Roads or Ruts—
Trucks Make Faster Time with
EATON
2-Speed Truck
AXLES

Truck operators who do most or all of their driving on poor roads find Eaton 2-Speed Axles almost indispensable. They need extra pulling power under such conditions—and Eaton gives it to them by doubling the conventional number of gear ratios. When roads are bad, when climbing stiff grades, or when starting under full load, drivers use "low low". When highballing, they make better time because they can shift into "high high". Between these two extremes, drivers have a choice of several ratios to meet the demands of road and load conditions.

And Eaton 2-Speed Axles last for the life of the truck, because of exclusive planetary gearing, positive lubrication, and other features which your truck dealer will be glad to show you.



Axle Division

EATON MANUFACTURING COMPANY

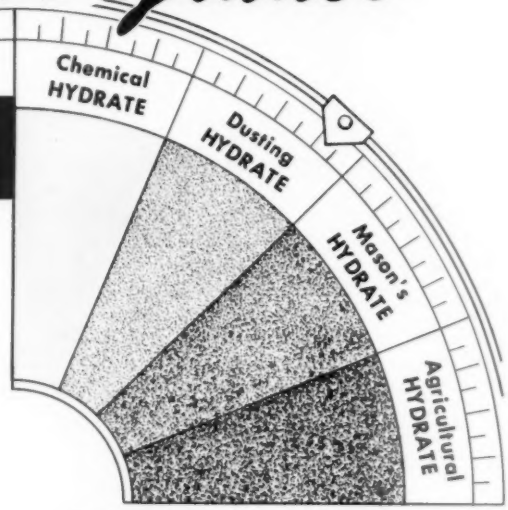
CLEVELAND, OHIO

PRODUCTS: SODIUM COOLED, POPPET, AND FREE VALVES • TAPPETS • HYDRAULIC VALVE LIFTERS • VALVE SEAT INSERTS • JET ENGINE PARTS • ROTOR PUMPS • MOTOR TRUCK AXLES • PERMANENT MOLD GRAY IRON CASTINGS • HEATER-DEFROSTER UNITS • SNAP RINGS SPRINGTITES • SPRING WASHERS • COLD DRAWN STEEL • STAMPINGS • LEAF AND COIL SPRINGS • DYNAMATIC DRIVES, BRAKES, DYNAMOMETERS

Produce ALL Grades of

HYDRATED LIME

with ONE UNIT



The Raymond Automatic Pulverizer is the standard machine throughout the world for disintegrating and classifying Hydrated Lime. It provides a modern, dust-free system for making superior lime products.

•

This one machine handles the complete operation of disintegrating, classifying, and conveying hydrated lime, as well as automatically rejecting impurities from the finished product.

•

All grades of product are available from this unit, ranging from super fine chemical and spray limes to mason's and agricultural hydrate. The change from one grade to another is made by one simple adjustment. Finenesses from about 95% passing 100 mesh to about 99.9% passing 400 mesh are readily available.

•

Whizzer air separation assures consistently uniform hydrate and greatly increases capacity in the finer grades.

•

Automatic Pulverizers are built in a number of sizes for many different capacity requirements.

For more information about the Raymond Automatic Pulverizer, write for catalog No. 60. One of these units may be an important aid in reducing costs and improving your hydrated lime production.

•
HIGH PURITY
•
LOW COST
•
NO DUST
•

COMBUSTION ENGINEERING – SUPERHEATER, INC.

Sales Offices in Principal Cities

Raymond
PULVERIZER DIVISION

1307 North Branch Street
Chicago 22, Illinois

"It's A Workhorse"

With an 11 year trouble-free service record!

This ruggedly-built Seco vibrating screen has the kind of "stuff" that every operator looks for in the equipment he buys. First, it's well engineered. In fact, it's the *only* vibrating screen with fully controlled true circular action. Second, it's a smooth performer—it won't bob or weave or bog down under the load. Third, it gives maximum tonnages of accurately sized materials and fourth, it stays on the job year after year with a minimum of maintenance. (Shut down for repairs only once in 11 years to replace one bearing.) Photographed on the job at B. V. Hedrick Sand & Gravel plant, Lilesville, North Carolina.

Profit with a Seco "Workhorse" on your job. Whatever your screening requirements from ag-lime to rip rap you'll find a dependable, long life Seco to fit your needs. Over 300 performance-proven models in single, double, triple and three and one-half decks. Send for Catalog No. 203.

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

What's Ahead? Check Your Screening Equipment Now!

And write for the name of your nearest Seco dealer.

SCREEN EQUIPMENT CO., INC.
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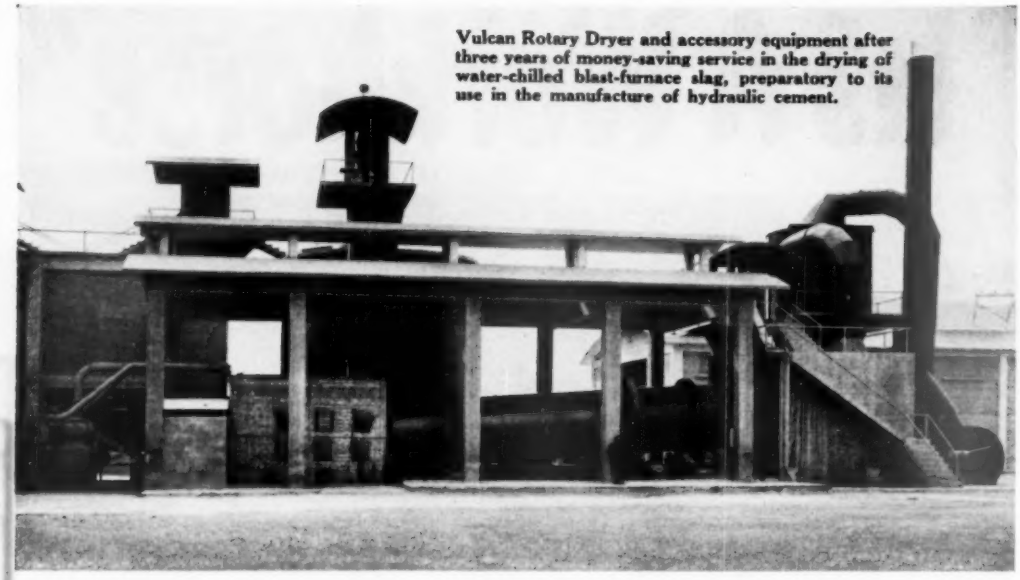
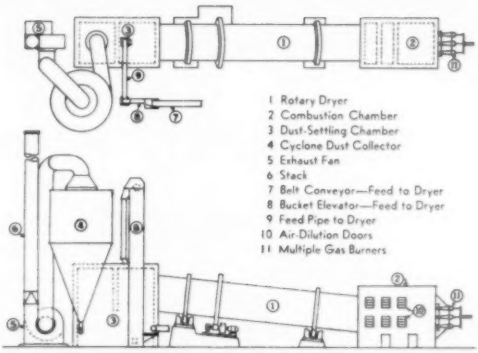


Vulcan Rotary Dryer and accessory equipment after three years of money-saving service in the drying of water-chilled blast-furnace slag, preparatory to its use in the manufacture of hydraulic cement.

Perhaps You, Too, Can Save Money By Getting the Water Out FIRST

If you are shipping, grinding or otherwise processing large quantities of coal, ore, concentrates, etc., containing free moisture, you may be overlooking an opportunity to achieve important savings—by getting the water out first; with a Vulcan Rotary Dryer designed and built especially to suit the job.

You don't have to guess what the saving will be, because Vulcan Engineers can estimate it quite accurately if provided with sufficient working data. Write us regarding any present or prospective requirement that involves the drying, calcining or cooling of any inorganic bulk material. We'll take it from there and our recommendations will be made without charge or obligation.



Plan and elevation of Vulcan dryer installation shown above. Provision is made for delivering a large volume of hot gases to dryer at relatively low temperature, which can be controlled within narrow limits—also for collecting and reclaiming dust. Other carefully-engineered features assure high efficiency at minimum expense for operation and maintenance.

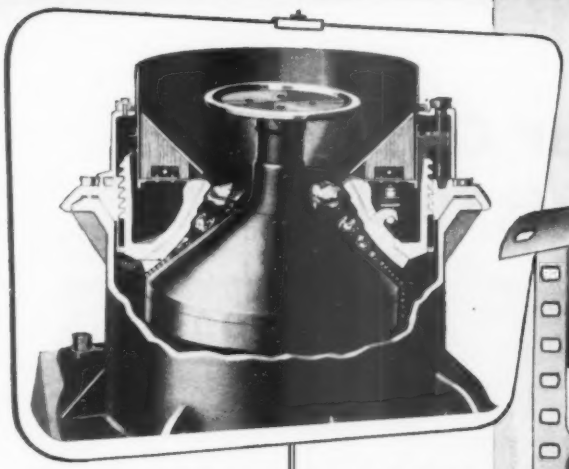
Vulcan Iron Works

Established 1849

WILKES-BARRE, PA., U.S.A.

Cable Address "Vulworks Wilkes-Barre"

Other Vulcan Products include Briquetting Machinery, Electric Hoists, Mining Machinery, Open Hearth Steel Castings, Heavy Special Machinery and all types of Industrial Locomotives. Bulletins on request.



"The SYMONS PROCESS of CRUSHING"

as revealed by the camera

'Tis said that "the proof of the pudding is in the eating." The proof in a Crusher, however, is in its ability to continually produce large quantities of desired product economically. That such has been proven by the SYMONS CONE CRUSHER is evidenced by the thousands of Standard and Short Head SYMONS CONES which have been installed throughout the world wherever fine reduction crushing is being done.

The enormous capacity of the SYMONS CONE CRUSHER is made possible by the remarkably simple SYMONS PROCESS OF CRUSHING which is revealed in the accompanying views through the camera's eye. To record the film, a Standard type CONE CRUSHER was sectionalized to expose the crushing cavity.

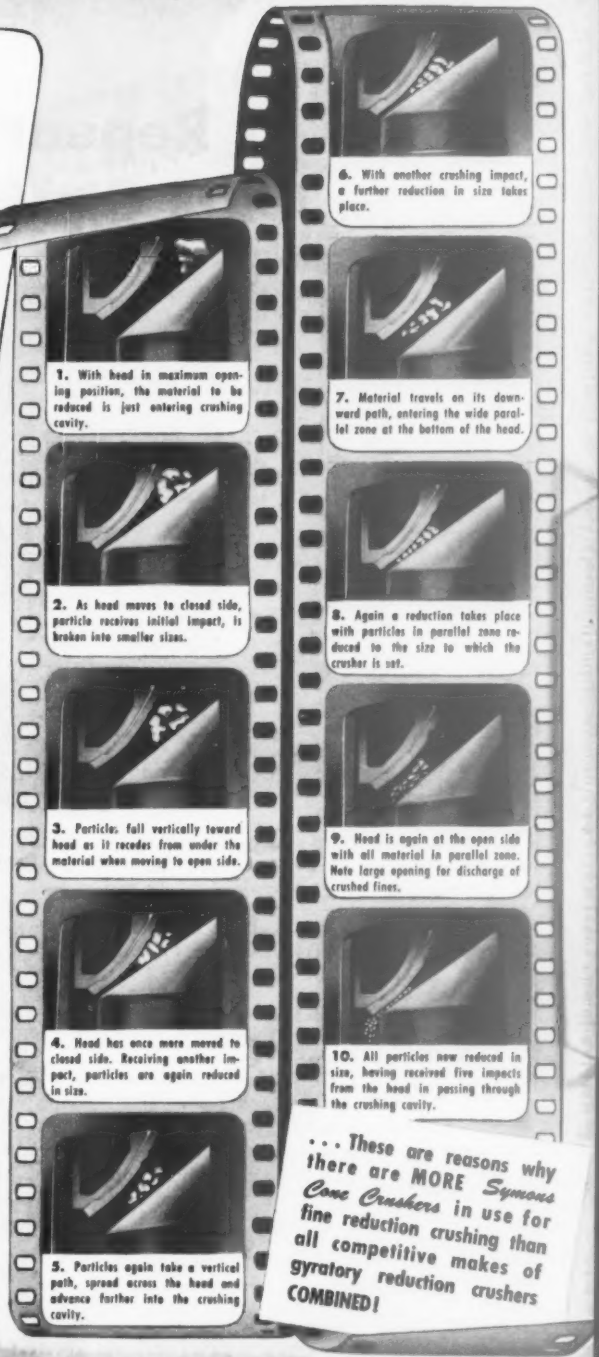
Although the SYMONS CONE is classified as of the "gyratory" type, the principle of crushing differs radically from that of the conventional gyratory since the head or cone in the SYMONS CRUSHER travels at least five times as far and gyrates much faster than in the ordinary gyratory type of crusher.

The material, in its passage through the crushing cavity in the SYMONS CONE, is controlled and timed to receive a series of rapid hammer-like blows before it is discharged.

The crushing action in the SYMONS CONE is a combination of controlled feed, high speed, timing, and extraordinarily large discharge capacity. These factors, coupled with the spring release safety feature of being able to pass uncrushable items—such as tramp iron, etc.—constitute ample proof of the superiority of the SYMONS CONE and the SYMONS PROCESS OF CRUSHING.

The camera reveals that from the time the material enters the crushing cavity until it is discharged, it passes through a successive series of crushing stages with a minimum of abrasion, sliding, or frictional wear—the entire process being one of smashing impact, resulting in maximum reduction.

C131


1. With head in maximum opening position, the material to be reduced is just entering crushing cavity.
2. As head moves to closed side, particle receives initial impact, is broken into smaller sizes.
3. Particles fall vertically toward head as it recedes from under the material when moving to open side.
4. Head has once more moved to closed side. Receiving another impact, particles are again reduced in size.
5. Particles again take a vertical path, spread across the head and advance further into the crushing cavity.
6. With another crushing impact, a further reduction in size takes place.
7. Material travels on its downward path, entering the wide parallel zone at the bottom of the head.
8. Again a reduction takes place with particles in parallel zone reduced to the size to which the crusher is set.
9. Head is again at the open side with all material in parallel zone. Note large opening for discharge of crushed fines.
10. All particles now reduced in size, having received five impacts from the head in passing through the crushing cavity.

. . . These are reasons why there are MORE *Symons Cone Crushers* in use for fine reduction crushing than all competitive makes of gyratory reduction crushers COMBINED!

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APPROVAL of fuel savings. Users of Fuller Inclined-Grate Clinker Coolers have reported savings as high as 20% due to recuperated heat returned to the kiln or furnace.

APPROVAL of fast, effective air-quenching. This ability of Fuller Inclined-Grate Clinker Coolers allows user to obtain specific quality effects when this result is required.

APPROVAL of increased grindability of cement clinker. Laboratory tests and reports from users have confirmed this ability of Fuller Inclined-Grate Coolers.

FULLER clinker cooling equipment is currently handling materials like pebble lime, ores, dolomite, iron nodules, and Portland cement clinker at a current rate of approximately 26,000,000 tons annually. This record has been built on a basis of advanced thinking and sound engineering . . . Engineering that enables every installation to operate at maximum efficiency with minimum maintenance. Take advantage of FULLER'S long experience in materials handling and cooling . . . A talk with one of our engineers may lead to more profitable operation.

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KVS

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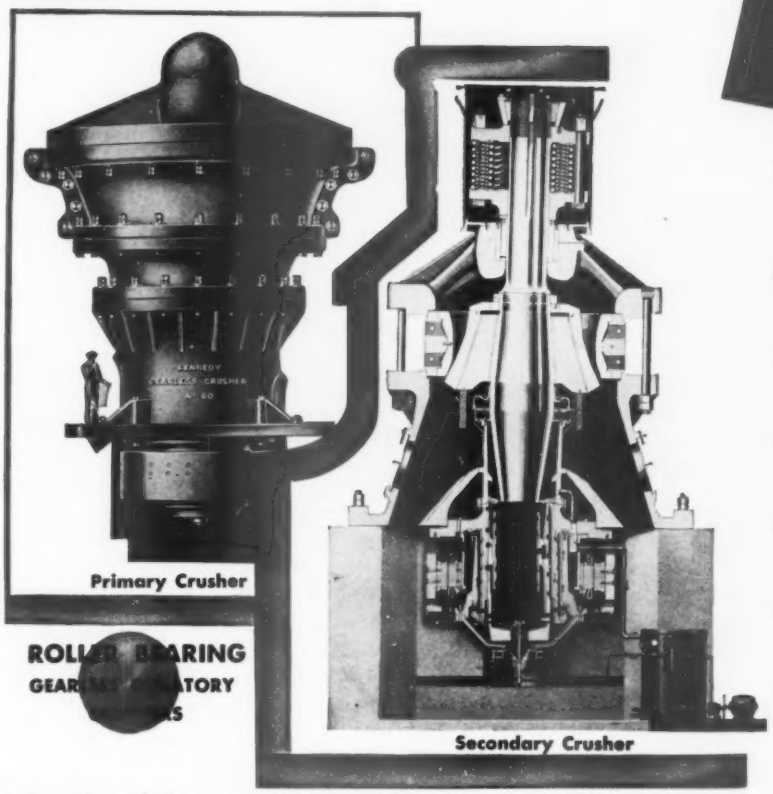
TALK ABOUT A REAL CRUSHER

It's Rugged!



ROLLER BEARING
GEARLESS ECCENTRORY
SHAFTS

- *Synchronous motor built into pulley assembly*
- *Power applied ONLY for crushing*
- *Force-feed lubrication*
- *No gears to waste power*
- *Added power at no added cost*
- *Quiet — smooth Frictionless action*
- *Varying capacities to serve every purpose*

Designed and built to produce, economically and consistently, maximum loads of uniform products. Assures efficient service with minimum "time off for repairs" under the most severe operating conditions.

Costs less in the long run because it has a larger capacity; uses less power; holds repair bills to a minimum; produces more and better rock tonnage, faster and at lower cost.

Kennedy Crushers are made in various size units delivering from 12 to 3600 tons per hour. Engineered to serve your exact needs. Fifty years experience in the building of heavy duty crushers is your assurance that "It Costs Less To Own The Best" when you use KVS equipment.

Send for bulletins describing, fully, all types of KVS crushers

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

These 3 Features Reduce Sizing Costs

Ripl-Flo SCREEN

"Does an excellent job of sizing. No trouble."

—That's what Mr. George Bozich, owner and manager of Monon Crushed Stone Co., Monon, Indiana, has to say about the *Ripl-Flo* vibrating screen shown above — one of four Allis-Chalmers screens installed in this crushing plant.

1. BALANCED CIRCULAR MOTION to every part of screen surface on *Ripl-Flo* screen utilizes every sq ft of cloth area . . . results in high capacity and economy.

2. EASE OF MAINTENANCE Only two bearings to lubricate instead of four! It's easy to tension or change screen cloth because clamping plate tension bolts are easily accessible — no stationary frame in the way.

3. LOW MAINTENANCE and initial cost. Use of precision bearings assures long bearing life. Compact design eliminates outer support frames, reducing initial costs.

Why not find out first-hand how you may be able to reduce costs on your job? The Allis-Chalmers representative in your area is an expert on screening equipment. Call him, or write direct for **Bulletin 07B6151B.** A-3091

ALLIS-CHALMERS, 975A SO. 70 ST. MILWAUKEE, WIS.

Ripl-Flo and *Texrope* are Allis-Chalmers trademarks.

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Controls

Texrope Drives

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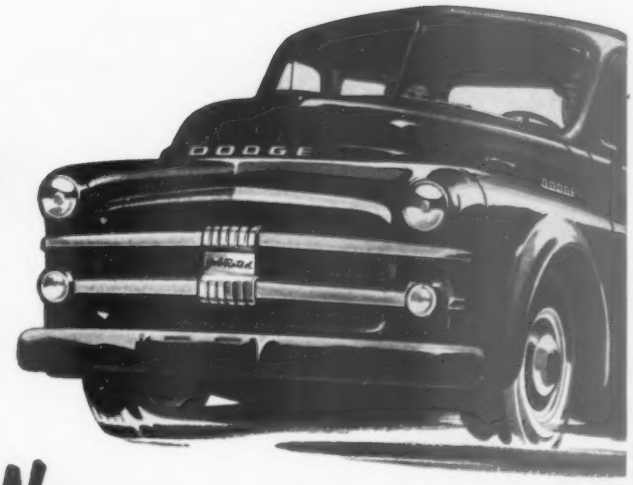
Crushers

Kilns, Coolers, Dryers

"Job-Rated" for QUARRYMEN



Brand new DODGE "Job-Rated" TRUCKS

The trucks that do the most for you!

More than 50 BRAND-NEW improvements . . . including

NEW! SMOOTHER RIDE with new, "Oriflow" shock absorbers—standard equipment on ½-, ¾-, and 1-ton models.

NEW! EASIER LOADING with lower ground-to-floor height—on all models through 2 tons.

NEW! EASIER BAD-WEATHER STARTING with new moistureproof ignition and high-torque starting motor.

NEW! MORE ECONOMICAL PERFORMANCE with higher (7.0 to 1) compression ratio—on all models through 1 ton.

NEW! SMOOTHER ENGINE IDLING with "hotter" spark plugs; on all models through 1 ton.

BRAND-NEW POWER—You get more power than ever—engineered for *your* job! Eight great engines—with net horsepower stepped up as much as 20%! You get more of the *right* power for your needs—with top economy! Yet, with all their extra value, new Dodge *"Job-Rated"* trucks are priced with the lowest.

BRAND-NEW EASE-OF-HANDLING—You can turn new Dodge *"Job-Rated"* trucks sharper . . . maneuver them more easily. New shorter turning diameters! New worm-and-roller steering gears! All this—plus cross-steering, wide front tread and short wheelbase.

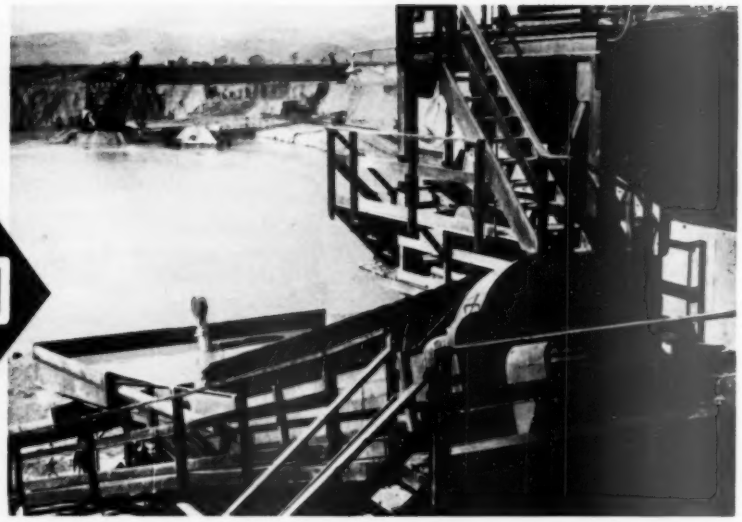
BRAND-NEW BRAKING SAFETY—New Dodge *"Job-Rated"* trucks are the trucks with new molded, tapered Cyclebond brake linings! New *extra-quiet* action! New extra-smooth, extra-sure stopping! New longer lining life! (On new 1½-ton and up trucks, except air brake models.)

PLUS THIS EXCLUSIVE! gyrol Fluid Drive available on ½-, ¾-, and 1-ton, and Route-Van trucks.

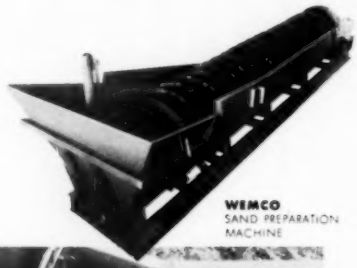
See your Dodge Dealer today for

THE TRUCK THAT FITS YOUR JOB... A DODGE Job-Rated TRUCK

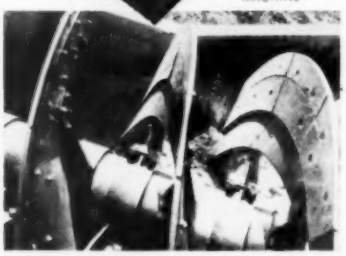
1,790,000 TONS OF SAND



washed at less than 4/100ths of a cent per ton wear cost.



WEMCO SAND PREPARATION MACHINE



Performance of these 78" **WEMCO SAND PREPARATION MACHINES** has been as impressive as the enormous size of the pit which furnished the sands. Replacement parts for the two machines have cost less than 4/100ths of a cent per ton of material handled to date, a record far surpassing expectations of the management of this leading western sand and gravel company*.

Simple design costs less

The exceedingly low upkeep cost of **WEMCO SAND PREPARATION MACHINES** results from design principles employing a minimum of moving parts, adequate bearing protection, larger shaft diameter and proper spiral speed as compared with other types of mechanical sand washing equipment.

Quality sands sell for more

Sand that meets specifications is sand that's easiest to sell. **WEMCO SAND PREPARATION MACHINES** have large settling tanks and high sand removal capacity, giving close control over fine fractions. This makes **WEMCO** machines ideally suited to production of specification sands.

And you get greater tonnage!

WEMCO SAND PREPARATION MACHINES combine large **effective** settling area with up to 100% greater sand removal capacity to give maximum production of clean, dry specification sands. Careful control of fine sand retention also adds to greater total recovery of desired sands.

*Name of company furnished upon request

WEMCO

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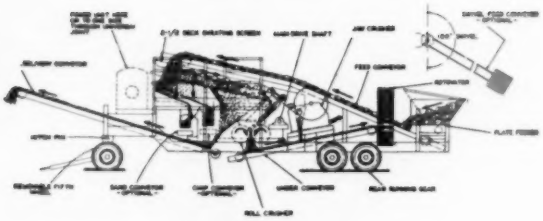

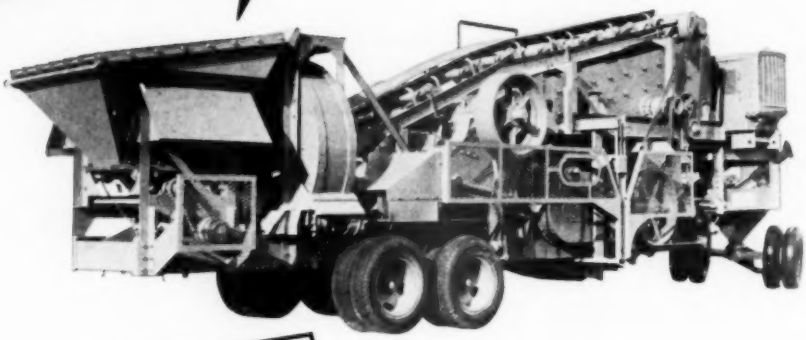

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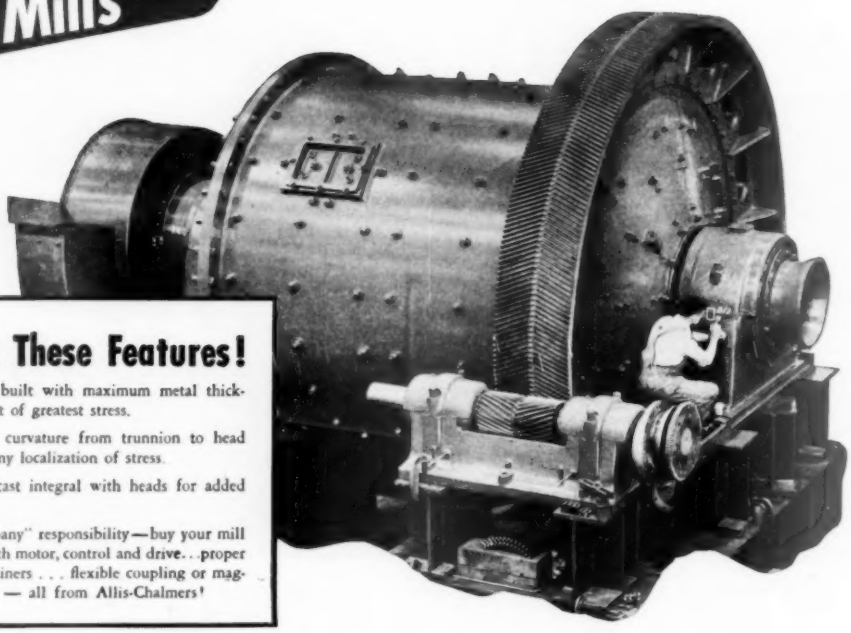

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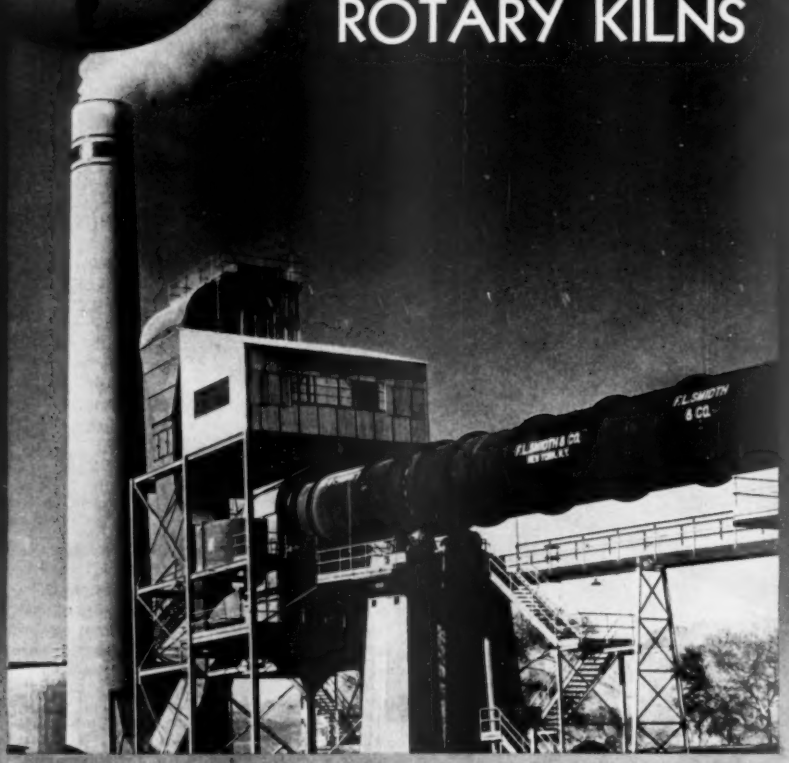

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"WE HEAR..."

March, 1951

An Indiana limestone company offered to replace the stolen Stone of Scone with a limestone replica, but was turned down by Alan Davidson, secretary of the British embassy in Washington, with the following reply: "His Majesty greatly appreciates your offer to replace the coronation stone with a replica made of Indiana limestone, but regrets that it is not possible for him to avail himself of your kindness."

* * * * * * * * * *

The railroad industry is currently petitioning the Interstate Commerce Commission for a general freight rate increase--the 9th since V-J Day. A 6 percent increase covering all commodities (with a few minor exceptions) has been requested. If the I.C.C. grants the request, which-seems likely, it will result in an increase of approximately 63 percent over average freight rates prevailing in 1946.

* * * * * * * * * *

An employer cannot always prevent a union from distributing its literature on plant premises merely because he feels it interferes with production or discipline. The National Labor Relations Board, in one case, rules that an employer must back up his claim that a union's literature impairs production or discipline before he may forbid its distribution on the premises.

* * * * * * * * * *

Industrial building contracts totaled $507,000,000 for the first five weeks in 1951, as reported by Engineering News-Record, which was a gain of 510 percent over the same period a year ago. However, private housing was down 33 percent from last year, the smallest volume in more than a year.

* * * * * * * * * *

Two of the nation's largest manufacturers of concrete block machinery, charged with anti-trust monopoly practices, have been ordered to divorce their interests. The government charges that their combined interests are in restraint of trade, and that the two companies control 65 percent of the concrete block machinery market in the country, leaving only 35 percent to 53 other firms.

* * * * * * * * * *

In 1950 the total income of the Maine Turnpike Authority climbed to $1,041,066, as compared with a total of $871,654 in 1949. Operating expenses for 1950 amounted to $273,654, leaving $767,412 for bond interest and other charges. In 1949, operating expenses totaled $228,949, and net income available for bond interest and other charges was $642,805.

* * * * * * * * * *

The Atomic Energy Commission, in continuing its search for strategic minerals, expects to put eight to ten diamond drilling rigs in an area in San Juan county, Utah, early this year. Holes 140 ft. deep will be drilled, with solid bit drilling through overburden, mudstone, shale and sandstone overlying the area.

* * * * * * * * * *

A compound known as "lime and iron" is being considered as a likely possibility for removing radioactivity from water on a large scale. Recent experiments have indicated that radioactive isotopes attach themselves readily to this precipitate which then can be removed by filtration in rapid sand filters.

WE HEAR

Construction in 1950 in the 37 states east of the Rockies totaled $14,501,055,000, an increase of 40 percent over the 1949 figure, according to an F. W. Dodge Corp. report. The biggest gain was in residential construction which was up 59 percent over 1949 with a total of $6,741,028,000. Non-residential awards in 1950 totaled $5,181,595,000, an increase of 42 percent. Public and private works and utilities totaled $2,578,432,000, or 4 percent over the 1949 total.

* * * * * * * * *

Due to the complete absence of naturally occurring sulfur in India and the stoppage of imports, the Council of Scientific and Industrial Research of India is investigating the possibility of manufacturing sulfur from gypsum, and also the possibility of tapping copper pyrites and other similar sources of sulfur for the manufacture of sulfuric acid.

* * * * * * * * *

Enough steel to build 10,000 freight cars per month during the first quarter of 1951 has been allocated by the National Production Authority. Prior to this, cars were being turned out at the rate of 6000 per month.

* * * * * * * * *

The world's supply of new rubber in 1951 is expected to be the highest in history, totaling nearly 2,800,000 long tons. Of this amount, 1,860,000 tons would be of crude rubber and 940,000 tons of synthetic rubber, of which 880,000 tons would be produced in the United States. Consumption of new rubber in 1950 totaled about 2,240,000 tons, which also established a new record.

* * * * * * * * *

In 1950, contract awards for highways topped those of 1949 by more than 40 percent, according to Engineering News-Record figures. Even so, 1950 fell far below the all-time highs of the 1930's in the physical volume of highway building.

* * * * * * * * *

A total of $961,600,000 for engineering construction of all classes for the first three weeks of 1951 was 38 percent higher than corresponding contract awards last year, as reported by Engineering News-Record. Private construction was up 69 percent, while public construction was up 19 percent. State and municipal works totaled 42 percent higher and federal construction was up 2 percent.

* * * * * * * * *

A bill has been introduced in the North Carolina State Legislature to create a permanent State Stream Pollution Commission which would have power to establish rules and regulations concerning methods of protecting waters of the state, to locate instances of pollution and apply remedies necessary to correct the situation.

* * * * * * * * *

A definite shift to contracts longer than a year has taken place since the outbreak of the Korean war. Unions are signing more long-term labor pacts with provisions for some method of altering wages, according to a survey of 229 contracts completed by the National Industrial Conference Board.

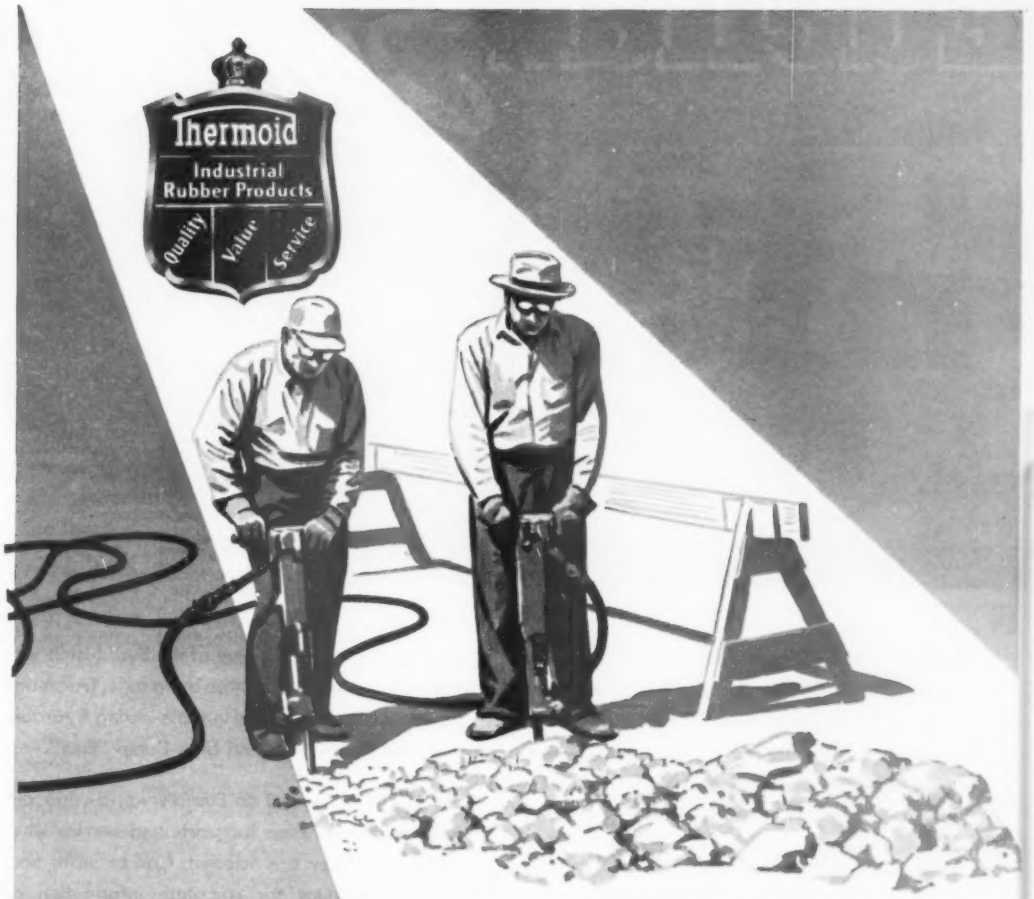
* * * * * * * * *

Appearing in the October, 1950, issue of Kansas Construction magazine, was the following observation made by Karl L. Kennedy about damage to Kansas highways by heavy-hauling commercial trucks: "As anyone who travels over the state of Kansas knows, our highways are taking a terrible beating from some very heavy trucks. The state of Kansas is now collecting around $8000 per month from motor fuels taxes from these trucks. That runs around $100,000 per year, or about enough to pave (without grading or bridges) two miles of highway. The truckers are using the highways commercially. They are making a profit out of their use. It seems only fair that they be required to pay for the damage done to them."

* * * * * * * * *

A $1,139,000,000 water and power project for the five Rocky Mountain states drained by the upper Colorado river has been approved by Interior Secretary Chapman. The long-term project will now have to be approved by the states, and then go to Congress for legislation and funds.

THE EDITORS



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HAULING

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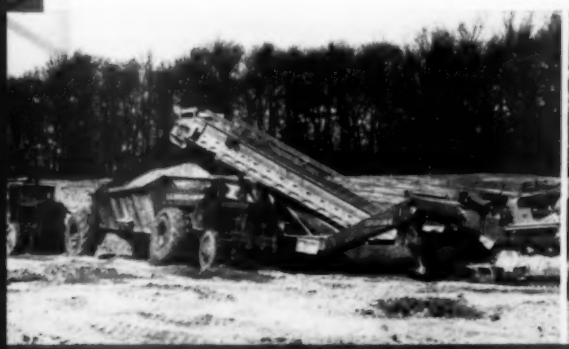

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EUCLID

★ ★ ★ Editor's Page

A Point Gained for Aggregates Industry in Taxation

AN AMENDMENT to the Excess Profits Tax Act of 1950, signed into the law by President Truman on January third, and which permits owners or lessees of more than one mining property to combine their several properties for the purpose of computing excess output under Section 453, corrects an inequity that existed in Section 735 of the World War II excess profits tax statute.

The law, as amended, will benefit many producers of rock products for whom, under Section 735, relief was based on the percentage of total exhaustion sustained by each mineral property within the taxable year. Credit for this relief is due J. Rutledge Hill, president of Gifford-Hill & Co., Inc., Dallas, Texas. The amendment was proposed by Mr. Hill in behalf of the sand and gravel and industrial sand industries in his appearance before congressional finance committees as chairman of the committee on taxation of the National Sand and Gravel Association.

Presenting the Case

Those who would seek concessions from Congress or from government agencies, provided they have merit, could profit from reading Mr. Hill's presentation. It was a masterpiece of logic, supported by adequate facts, and it presented the case for the industry clearly and most convincingly.

Mr. Hill's statement, as submitted, was drawn up to bring out all the peculiarities of the industry which are not understood outside the industry itself, and which should be considered in drawing up any equitable plan for taxing excess profits. Great emphasis was placed on the rapid depletion of deposits as experienced during World War II, and subsequently as a result, which had not been given any consideration in setting up the tax structure.

While depletion allowances have not yet been granted, the case for depletion as presented by Mr. Hill was just as convincing as his disclosure of why Section 735 was unworkable insofar as it granted the relief which it was supposed to do. After reading his case for percentage depletion, there seems to be considerable hope that relief from a serious tax injustice will ultimately come about.

Mr. Hill definitely proved that Section 735 was confusing, complicated, inequitable, expensive and produced little or no relief for the sand and gravel industry. He used actual situations to show why the segregation of properties for the purpose of computing excessive production was unfair and impractical.

Cases of Inequities

One unsound provision required that a mine had to have been in operation for a minimum of six months in the base period. Obviously that provision did not contemplate that sand and gravel operations often are moved between respective sources of materials because those deposits are readily and often rapidly exhaustible.

The case of a producer who, in 1940, had exhausted all his gravel reserves after several years of production, was pointed to as proof of how that producer had been unjustly penalized. In his case, operations were removed to another deposit nearby and production at a rate several times his normal output continued throughout 1942 and 1943.

For the simple reason that the newer operation was not in production during the base period, none of the excess production could qualify for relief. If, as it was pointed out, the operation had been moved a year earlier, all the excess production would have qualified for relief.

In another case pointed to, through sheer chance, a producer was denied relief for excess production because he had no normal base period unit profit as required. The producer in question started operations on a difficult deposit and, as a result, lost considerable money in 1937 and 1938 before profitable operations were established late in 1938. A rate of production, in 1942, four times that of 1939, was not eligible as excess production qualified for relief because a normal base period unit profit did not exist.

The foregoing examples, and others just as clear, augmented by statistical proof available from government production figures to show how little relief had been granted for excess production, were conclusive and instrumental to the amendment adopted. Under the revision, all mines of a producer can now be combined in one computation in treating the mineral properties as one.

After reading Mr. Hill's analysis, we suspect there are many other inequities in the laws affecting industry, based upon lack of knowledge of an industry, that need to be, and can be, clarified for the guidance of government. Careful analysis by qualified individuals in the affected industries is essential and time is of the essence. Too often the inequities are not corrected until industries have needlessly suffered hardships.

Bror Nordberg

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Rocky's NOTES

Nathan C. Rockwood

"Progressive Discussion" for Better Concrete

PROGRESS IS BEING MADE toward better concrete for some purposes, particularly for more durable pavements. However, most of this progress appears to be still in the discussion stage, except for one important step already generally practiced. That is the use of a granular subbase under the concrete—something we have editorially advocated, off and on, for perhaps 40 years. We believe most highway engineers still regard this granular layer as "stabilizing the foundation soil" to prevent capillary absorption of moisture from the subgrade and consequent mud-pumping and frost-heaving, but to our mind there is another distinct benefit, which is absorption of surplus water from the freshly placed concrete, thus permitting sedimentation to take place; hence consolidation of the concrete-mix while it is still fluid.

Concrete experts who visited Germany in 1946 and '47 came back with glowing reports of the excellence of the concrete-paved autobahnen. Members of the American Concrete Institute are familiar, we presume, with the papers by Myron A. Swayze, director of research, Lone Star Cement Corp., and F. H. Jackson and Harold Allen, of the Bureau of Public Roads. There has been published since a considerable amount of discussion of these papers; and some new papers evidently inspired by them.

Admitted Facts

Mr. Swayze concluded that German portland cements used to build the autobahnen (he had "never seen concrete highways in better shape") were vastly *inferior* to American portland cements, with "the single exception where the German cements may have a slight advantage over ours in workability of the concrete." Mr. Jackson admits that the German cements probably were lighter burned and coarser ground than ours; moreover, many of them were 25 percent or more ground blast-furnace slag.

Mr. Jackson ascribed the good results mainly to granular subbases, adequate drainage, very dry concrete mixes, well compacted, and use of well graded aggregate no larger than 1-in. size. Those who discussed his paper and were familiar with European practice generally agreed with him on dry mixes and compaction but doubted the necessity of the 1-in. limit. Mr. Swayze had concluded that German success was due entirely to their construction methods.

In addition to dry mixes well compacted, the Germans used two courses, adding the top course after the lower course had set (or shall we say, *drained* into the granular subbase) for an hour or more. To place the top course and finish, it was necessary to add water to the mix. In closure to discussion of his paper, Mr. Swayze said: "The German method of laying a dry base course, followed by a wetter top course, is an old American method for two-course sidewalk construction. While it appears to contain an element of danger, actually enough water is absorbed from the top course by the dry base to provide first, good bond between courses, and second, a moderately low water cement ratio at the surface."

We don't think Mr. Swayze went far enough. There was also excess moisture in the lower course, at the start, or after tamping, because even the dryest possible mix that is placeable contains more water than can be chemically or advantageously physically combined with the cement. Consequently, the lower course benefited by draining off this excess water into the granular subbase, just as the top course benefited by drainage or seepage into the hardened lower course. In both instances we are *utilizing* the laws of sedimentation, capillarity, and consolidation, instead of forcing water up through the mixture and thus defeating these laws.

Change Construction Methods

Mr. Swayze followed up his earlier conclusions with more detailed recommendations for changes in present American practice, in a paper published in the December, 1950, issue of the *Journal* of the American Concrete Institute under the title "Finishing and Curing: A Key to Durable Concrete Surfaces." He would revert to early American methods of the 1920's and before, when the concrete was tamped and final surfacing and curing delayed until at least some of the excess moisture had evaporated or been bled out by floats, rolling or tamping. The "curing" was done much as on the German autobahnen, by covering with canvas tents, which kept out the sun, wind and rain, but permitted enough circulation of air for slow drying out. Then the pavement was cured for several days by covering with dampened earth, straw or burlap.

This late damp- or water-curing (water was sometimes ponded on the dried concrete), when properly timed to the placing, finishing and initial curing or drying, Mr. Swayze believes results in better pavement concrete, and he has made numerous laboratory tests to prove it. The use of air-entraining concrete is an alternative. Mr. Swayze apparently believes that the character of the cement is not important, for he remarks: "Our conclusions from these tests, and from consideration of other points discussed in this paper, are that old-fashioned cement *per se* furnishes no panacea for the ills of concrete. Its sole virtue, if it can be called such, very probably lay in a much greater tendency to bleed which, combined with a slightly longer setting time, forced the contractor to delay his finishing operations until this bleeding water was out of the way."

To which we might answer that the sole virtue of modern portland cement, if it can be called such, is that it hardens fast and bleeds little. Now, there is a copious literature on the "bleeding of cement pastes, mortars and concrete," with ingenious methods of computing the "bleeding rates and capacities," but we have yet to see it demonstrated that bleeding *per se* is harmful. To be sure, it has been demonstrated that when the direction of the bleeding is up, against the friction of falling particles and against gravity, there is undesirable "water gain" or water pockets formed under some of the aggregate. But this would not happen if the bleeding were down instead of to the surface, as was explained on this page in our July, 1950, issue in reviewing a new book on sedimentation processes.

To cap our thesis we refer the reader to the *Journal* of the A.C.I., January, 1951, where is a paper entitled "Coarse-Ground Cement Makes More Durable Concrete," by Harold W. Brewer and Richard W. Burrows, of the U. S. Bureau of Reclamation, that fountainhead of knowledge pertaining to cement and concrete. Hitherto we could only theorize, but now *expert opinion* backed by laboratory experiments, can be quoted in support of our long held theory. The authors' summary is: "It can be concluded from these test results that concrete made with coarse-ground cement is more resistant to cracking resulting from drying, and that it has greater resistance to freezing and thawing under normal exposure than concrete made with fine-ground cement."

$10,000 SAVED ANNUALLY

on a $12,600 investment

$3,500 SAVED ANNUALLY

on a $4,200 investment

These are actual Case Histories

CASE HISTORY No. 1

With a New Bulldog Hammermill crushing 20" and under Fuller's Earth, 50% moisture

Before	*After*
Operation required one primary double roll, 8 screens, two secondary double rolls, with auxiliary equipment. Continuous clogging produced irregular finished product, consumed excessive fuel in drying, extruding operations expensive.	Installing one Bulldog Hammermill. One stage operation, no clogging — no delays or shut-downs. Now produces a uniform cubicle product easily dried, saving fuel. Saves labor, maintenance, fuel and produces a better finished product.

CASE HISTORY No. 2

Rebuilding an existing operating Hammermill crushing Limestone for cement

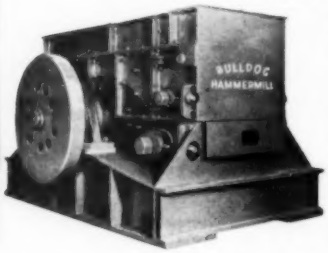
Before	*After*
Maintenance required replacement of 26,400 lbs. of manganese steel hammers and 12 sets of hammer bolts annually. Load capacity required extra operating hours. Primary grinding was not suitable for final roll type pulverizer.	With Bulldog rebuilding, the Hammer replacement was reduced to 3,600 lbs. manganese steel and one set of hammer bolts per year. Capacity increased 30% with less power consumption, better finished product saving power and maintenance in roll type pulverizer.

Second Hammermill purchased as a result of savings.

YOU CAN CUT COSTS — INCREASE CAPACITY — IMPROVE PRODUCT

with a

NEW BULLDOG HAMMERMILL



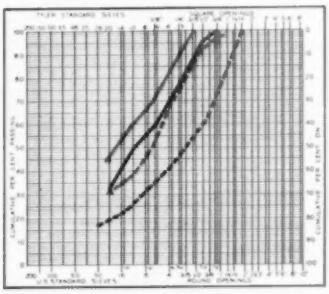
Compare your crushing operation with the actual proven results charted at right.

Solid red line **indicates material from Bulldog Hammermill with screens in closed circuit.**

Dotted red line **shows Bulldog Hammermill no screens, open crushing.**

***Solid black line* indicates standard impactor with screens in closed circuit.**

***Dotted black line* indicates standard hammermill no screens, open crushing.**



Bulldog Hammermills with Non Clog *Moving Breaker Plate* for sticky or high moisture materials or with *Stationary Breaker Plate* for dry materials are built in all sizes up to 72" x 60" for primary, secondary and fine reduction. Write for complete details.

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HAMMERMILL CHICAGO — **HAISS** NEW YORK — **UNIVERSAL** CEDAR RAPIDS

LABOR RELATIONS TRENDS

Why Some Unions Don't Like T.-H. Act

By NATHAN C. ROCKWOOD

AN EXAMPLE of how the Taft-Hartley Act (Labor-Management Relations law) puts a crimp in some common and long cherished practices of the building trades unions is a recent ruling of the National Labor Relations Board in the case of the Peerless Quarries, Inc., Turner, Kansas, crushed stone producer. We presume the situation of this producer was and is similar to that of many others serving cities and localities where the building trades unioneers are dominant, politically and economically. We have published in these columns several instances of persistent efforts by these unions to make closed-shop arrangements in spite of their illegality under the T.-H. Act.

The present case arose over the refusal of Local No. 101 of the International Union of Operating Engineers (A. F. of L.) to permit a qualified Negro tractor operator to continue in his job because although a union man he was not a member of this union, and he was not a member because the Operating Engineers would not accept Negroes as members, although the color line was not an issue in this case. As in many other aggregate plants dominated by the Operating Engineers' union, the common labor was also organized, as Local 663 of the Hod Carriers' Building and Common Laborers' Union (also A. F. of L.). The Negro tractor operator was a member of this local, but the Operating Engineers' union officers objected to his holding a job that could, in their estimation, be filled only by a member of their own union.

Their demand on the employer to this effect not producing results, they obtained the assistance of the officers of the Hod Carriers' union, and together they "persuaded" the Negro tractor operator that he must be transferred to some other job. He told his superintendent about this and said that if he must give up his tractor job he would prefer a job driving a diesel-powered truck, for which he was competent, having driven a diesel-powered Caterpillar tractor, but a lower rate of pay went with the truck job. However, he was not ignorant of his rights under the law and asked for time off to consult a lawyer and the N.L.R.B.'s regional office.

Employer in Wrong

The superintendent offered no objection to the transfer of this employe, which later caused the N.L.R.B. examiner to doubt the employer's claim in defense that the transfer was voluntary. The superintendent, said the report, merely acquiesced in the matter under threats by the two unions to picket the operation.

The employer was in the wrong in the first place, the N.L.R.B. decided, because it had entered a contract in October, 1949, with the two unions for a union shop with dues check-off, without fulfilling the requirement in the Taft-Hartley Act of first holding an election and getting a certification from the Board. It was only after the signing of this contract that the Operating Engineers' union attempted to get rid of the Negro tractor operator, although he had served in this job satisfactorily for two years prior to the signing of the contract.

The N.L.R.B. therefore ruled that the employer had violated Section 8(a)(3) and 8(a)(1) of the amended N.L.R.A. (the Taft-Hartley Act by another name) by delegating to the two unions control over the employment status of this one employe and of causing his transfer to a less desirable job. By demanding the transfer the unions caused the employer to discriminate against this employe. The Board might have compelled the employer to reimburse all the employes for the union dues illegally withheld from their pay, but the examiner had held the employer not obligated to do this since there was no evidence that he had used coercion in making employes join up, and no exceptions to this ruling were filed by the interested employes.

Discrimination Only Issue

The Board's report reads in part: "In making these findings, it is unnecessary to resolve the conflicts in testimony in regard to whether the [transferred] employe was denied membership in Local 101 [the Operating Engineers' union] because of his race and no findings in that regard are made herein. Section 8(b)(2) provides that it shall be an unfair labor practice for a labor organization 'to cause or attempt to cause an employer to discriminate against an employe in violation of subsection (a)(3) or to discriminate against an employe with respect to whom membership in such organization has been denied or terminated on some ground other than his failure to tender the periodic dues and initiation fees uniformly required as a condition of acquiring or retaining membership.

"It seems clear that the first proscription of this section refers, *inter alia*, to cases such as the instant proceeding in which union-security provisions of a contract are being enforced despite the lack of compliance with the provisos to Section 8(a)(3) of the Act. The second proscription in the above quoted section refers to cases in which there is a valid contract with lawful union-security provisions but such provisions are being enforced against an employe to whom membership in the contracting organization has been denied. The latter situation is not that of the instant proceeding."

Board's Orders

The Board ordered: "The employer shall cease and desist from entering, reviewing, or enforcing any agreement with the International Union of Operating Engineers, Local 101 (A. F. of L.) or with the International Hod Carriers', Local 663 (A. F. of L.) or with any other labor organization which requires maintenance-of-union membership as a condition of employment; recognizing either of the above unions or their successors unless and until they shall be certified by the N.L.R.B.; giving effect to contract with above unions; encouraging membership in the Operating Engineers or in any other labor organization; telling employes that in order to work for the company they must become members of one of two of the above unions except to the extent that membership in a labor organization may be required as a condition of employment under valid contract; or in any like or related manner interfering with employes' self-organizational rights; offer reinstatement to former or substantially equivalent job to employe discriminatorily transferred; withdraw and withhold recognition from above unions unless and until they are certified by N.L.R.B.; post notice.

"Operating Engineers' Local 101 (A. F. of L.) and Hod Carriers' Local 663 (A. F. of L.) shall cease and desist from causing or attempting to cause Peerless Quarries, Inc., to demote, transfer, discharge or otherwise discriminate against employes; from giving effect to union-security provisions of Section 8(a)(3); restraining or coercing employes in their self-organizational rights. Notify above company that they have no objection to employment in former or equivalent job of employe discriminatorily transferred; post notice.

"Employer and unions shall jointly and severally make whole [for his loss of wages] the employe discriminatorily transferred."

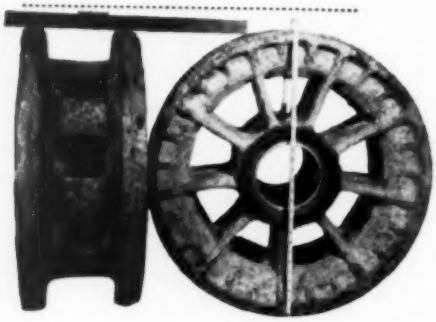
Thus, as often happens, the excessive greed of the unioneers brought down the lightning of retribution and cancelled out an illegal contract that they might otherwise have gotten away with.

Employer Can't Collect Fines

Another decision of the N.L.R.B. in an automobile accessory manufacturer's case is of general interest to all employers. It came under the same sections of the T.-H. Act quoted above.

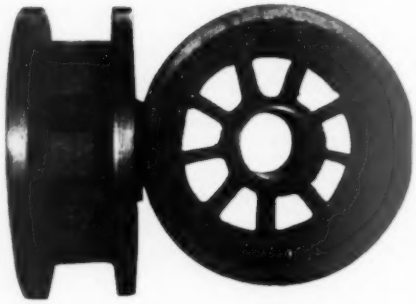
(Continued on page 122)

Now its worn out...



Note the slant of the level which indicates extent of rim wear on this shovel idler wheel

NOW IT ISN'T!



Automatically rebuilt with Stoody High Carbon and hard-faced with Stoody 105, idler is now better than new!

STOODY HARD-FACING ALLOYS

reclaim worn and discarded parts for new records and service!

A worn part isn't always a useless part—in fact, Stoody Hard-Faced parts are generally *better* than new replacements. *They give more life*—last two or more times longer. *They cut replacement costs. They eliminate downtime for changes. They save labor costs!*

The uses for Stoody Hard-Facing Alloys on all heavy equipment are almost unlimited... They fight abrasive wear, heat, corrosion and impact or combinations of these factors. And reclamation cost is usually only a fraction of new part cost!

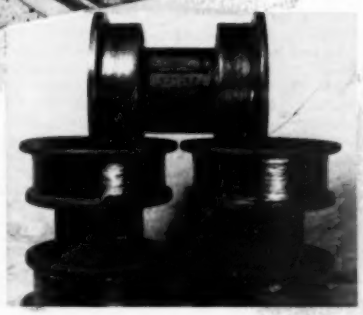
To get more life from all equipment—to save on steel, hard-face with Stoody Alloys today. It's good wear-insurance at all times... extra important when replacements are difficult or impossible to obtain!

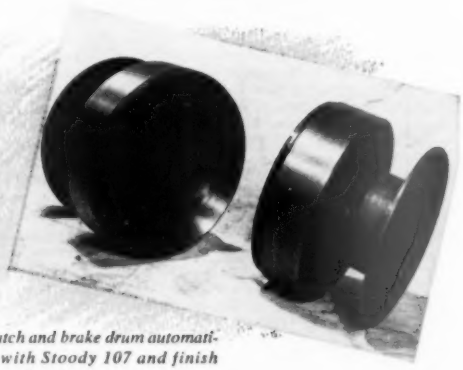
AUTOMATIC HARD-FACING SERVICES—Much equipment is now being hard-faced automatically by independent job shops with big savings in time, improved appearance and lower cost. Names of organizations nearest you and equipped for automatic hard-facing will be forwarded upon request.

STOODY COMPANY 11929 East Slauson Ave., Whittier, California

ABOVE

These hammer mills are repeatedly built up, then hard-faced manually with Stoody Self-Hardening 21. With hard-facing their life is several times greater.





RIGHT

Tractor Rollers are almost smooth as new with this automatic application of Stoody 105.

RIGHT

Power Take-Off clutch and brake drum automatically hard-faced with Stoody 107 and finish ground on faces.

the *Personal Side* of the news

Research Engineer

JAMES R. BARNES has been appointed research and development engineer for the Universal Concrete Pipe Co., Columbus, Ohio. He was formerly

James R. Barnes

chief of surveys for Ammann & Whitney of New York, consulting engineers to the New Jersey Turnpike Authority. Prior to that he was structural engineer at headquarters of the Royal Canadian Air Force, Ottawa, coordinating defense housing and maintenance programs. Mr. Barnes is a graduate of Sir William Ironsides Engineering College, and a member of the Canadian Institute of Surveying and Photogrammetry.

Executive Vice-President

LEWIS R. SANDERSON, a director of the National Gypsum Co., Buffalo, N. Y., and vice-president in charge of operations since 1947, has been appointed executive vice-president. Born in Des Moines, Iowa, and a graduate of the engineering school of Iowa State College, Mr. Sanderson started his career in the gypsum industry in 1914 in a gypsum mill near Tawas, Mich., where he subsequently became superintendent. He later joined the Atlantic Gypsum Products Co., and became superintendent of the Portsmouth plant and later on was transferred to New York City in the same capacity. In 1936, when National Gypsum Co. acquired the Atlantic plants Mr. Sanderson continued as manager of the New York operation. A short time later he was also put in charge of the company's ships and its gypsum quarries at Dingwall, Nova Scotia. In 1938, he was assigned the job of engineering and building a new plant at New York. During the war Mr. Sanderson directed the Bluebonnet ordnance plant at McGregor, Texas, which earned the Army-Navy "E" and was cited as one of the three most efficient ordnance plants in the country. After the war, he was placed in charge of engineering and plant construction. In this capacity, he completed new plants at Baltimore, Md., and Kimballton, Va., and supervised modernization at all plants. In 1947, Mr. Sanderson was named vice-president in charge of operations and the following year he became a director of the company.

Institute Lecturer

R. H. BOGUE, director of the Portland Cement Association Fellowship at the National Bureau of Standards, Washington, D. C., has gone to Europe for a two months visit. He has been invited to give a series of lectures at the Instituto Tecnico, de la Construccion y del Cemento in Madrid, Spain.

General Sales Manager

PURD B. WRIGHT, sales manager of the Kansas City office of the Ash Grove Lime and Portland Cement Co., Kansas City, Mo., has been named general sales manager, according to an announcement by Allan B. Sunderland, president of the company. Mr. Wright will continue to maintain headquarters in Kansas City.

President of Engineers Club

LEWIS A. PARSONS, assistant consulting engineer for Calaveras Cement Co., San Francisco, Calif., has

Lewis A. Parsons

been elected president of The Engineers Club of San Francisco for the year 1951.

National Safety Council Appointment

CHARLES F. ALEXANDER has been named manager of the industrial department of the National Safety Council, Chicago, Ill., according to an

Charles F. Alexander

announcement by Ned H. Dearborn, Council president. For the past five years, Mr. Alexander has been associated with Cherry-Burrell Corp., Chicago, his most recent position being assistant general manager of manufacturing. For two years he was senior staff engineer with George Fry and Associates, management engineers, and for 10 years served in various positions in engineering, production, sales and foreman training with the Buick Motor Division of General Motors Corp. A. M. Baltzer, assistant manager of the department since 1946, continues in that capacity.

President Retires

ROBERT W. LEA has retired as president of the Johns-Manville Corp., New York, N. Y. to join Olin Industries, Inc., East Alton, Ill., of which he has been a director since April, 1950. Mr. Lea joined Johns-Manville in 1939 as vice-president for finance and was elected a director in 1940. He became executive vice-president in January, 1946, and the following September was elected president.

Named Director

J. RICHARDSON DILWORTH, a director of The Concrete Brick Co. and The Carbon Limestone Co., Lowellville, Ohio, has been elected a director of the Rockwell Manufacturing Co.

Re-elected Member of Board

HARRY D. SIMONTON, assistant traffic manager of the Federal Portland Cement Co., Buffalo, N. Y., has been re-elected to the board of directors of the Niagara Frontier Industrial Traffic League.

F. D. Coppock to Resign

FRED D. COPPOCK plans to resign as president and general manager of the American Aggregates Corp., Greenville, Ohio, at the annual stockholders

Fred D. Coppock

meeting in April, but will remain as chairman of the board. Mr. Coppock, who recently celebrated his 50th anniversary with the firm he founded, revealed his plans during a discussion of the reclamation policy in which the company has pioneered in beautifying gravel pits that have been worked out. One of these areas is Wayne Lakes Park in Darke County, a picture of which appears in color on the front cover of the January, 1951, issue of ROCK PRODUCTS. Mr. Coppock is very much interested in these reclamation projects and has made a hobby of the company's policy in reclaiming and beautifying worked out gravel pits. At the present time there are about 20 of these projects in process or in planning stages. Mr. Coppock will continue active in the conduct of the business.

Production Manager

CARLOS L. CINTRON, formerly superintendent of the Ponce Cement Corp., Ponce, Puerto Rico, has been appointed production manager of the Puerto Rico Cement Corp. at Guaynabo, Puerto Rico. Mr. Cintron, a chemical engineering graduate of the Engineering College, University of Puerto Rico, served as senior chemist of the Puerto Rico Cement Corp. from 1936 to 1941. He has been superintendent of the Ponce Cement Corp. since 1942.

Kaiser Appointments

WALLACE A. MARSH, who has been general manager of the Permanente Cement Co. since January, 1949, has been appointed vice-president and general manager of Permanente Cement Co., Glacier Sand and Gravel Co. and Permanente Steamship Corp. Claude E. Harper, general manager in charge of all activities of the gypsum division of Kaiser Industries, Inc., has been named vice-president and general manager. Robert S. Barneyback, general manager of the sand and gravel division, has been made vice-president and general manager of the division.

Wallace A. Marsh

Mr. Marsh has been associated with various Kaiser companies since 1937. He started as a sand and gravel salesman in the Radum, Calif., plant, and subsequently served as manager of operations and sales for Henry J. Kaiser Co.

Claude E. Harper

Mr. Harper was a salesman of oil well cements in 1941 when he joined the Kaiser organization and later became district manager of the Hawaiian division of Permanente Cement Co. Prior to his appointment as general manager in January, 1949, he served as assistant general manager of Standard Gypsum Co. (now Kaiser Gypsum).

Robert S. Barneyback

Mr. Barneyback joined the Kaiser organization in 1933 during construction of the San Francisco Bay Bridge approach. He served as assistant general manager of the sand and gravel division, Henry J. Kaiser Co., until 1949, when he was appointed general manager.

Talks on Cement

G. R. DUMOND, general superintendent of the Standard Portland Cement Division of the Diamond Alkali Co., Cleveland, Ohio, recently gave a talk on the manufacture of cement at a meeting of the Diamond Technical Society in Painesville, Ohio, with a showing of the movie "The Drama of Portland Cement." After going into details of the history, manufacture and uses of portland cement, Mr. Dumond explained many of the recent changes and trends in cement manufacture and distribution. He ended his talk with a question-and-answer session in which he was assisted by Harold Stevens, assistant general superintendent of the Standard Portland Cement Division; Louis Creveling, chief chemist; and Howard Houck, physical tester.

Engineer-Craftsman

BROWNELL MCGREW, engineer in the Los Angeles, Calif., office of Allis-Chalmers Manufacturing Co., Milwaukee, Wis., and author of a series of articles on "Crushing Practice and Theory" appearing currently in ROCK PRODUCTS, is also an amateur cabinet-

maker of no mean ability. For the past 10 years he has spent his spare evenings reproducing original pieces of Phyfe and Chippendale furniture, beautifully carved and finished. In that time he has almost completely furnished his seven-room house. His handiwork includes an entire dining room set with a long oval table of his own design. A tilt-top table, beautifully carved, is copied from an original in the Victoria and Albert Museum in London, and a Goddard block-front secretary, made of mahogany and satinwood, is from the original in the Metropolitan Museum. A four-poster bed canopy, Philadelphia highboy and chair have also been made by Mr. McGrew during his spare time.

Association Officer

R. A. BEERS, manager of the Kalamazoo Concrete Pipe Co., Kalamazoo, Mich., has been elected second vice-president of the Michigan Builders Supply Association. T. C. Tiedebohl, South Haven, Mich., has been named to the board of directors.

General Chairman

FRED W. REINHOLD, president of Anchor Concrete Products, Inc., Buffalo, N. Y., has been named general chairman of the 1951 Cancer Crusade of the Erie County Chapter, American Cancer Society. Mr. Reinhold is a past president of the National Concrete Masonry Association and has been a director for 11 years.

Outstanding Citizen

MELVIN H. BAKER, president of National Gypsum Co., Buffalo, N. Y., has been nominated by the Buffalo Evening News as one of 12 outstanding citizens of 1950. He also received a Certificate for Industrial Statesmanship in 1950 as one of the nation's top 50 industrialists at the Mid-Century Boston Jubilee, and was cited by the University of Buffalo's School of Business Administration as the Niagara Frontier's outstanding businessman.

Discusses Lime Industry

FREDERICK WITMER, president and general manager of the Ohio Hydrate and Supply Co., Woodville, Ohio, recently gave a talk on the lime industry of northwestern Ohio at a Rotary Club meeting in Fremont, Ohio. With the use of slides, Mr. Witmer described the products, quarry, plants, and machinery used for the various processes in the production of lime and its by-products.

Sakrete Representative

LOWELL V. PERKINS has been appointed Iowa-Nebraska representative for Sakrete by the Twin City Concrete Products Co., Minneapolis, Minn. He has been general manager of the Weston Lighting Co. for the last year, and for eight years was representative of the Hawkeye Portland Cement Co. in northern Iowa, Minnesota and South Dakota.

Officers Re-elected

VICTOR E. HEDRICK has been re-elected president and general manager of Greystone Concrete Products, Inc., Henderson, N. C. Jack F. Canady has been re-elected vice-president and secretary; A. D. Capeheart, vice-president and treasurer; and Cecil T. Lewis, assistant secretary and assistant treasurer.

OBITUARIES

WALTER GEIST, president of Allis-Chalmers Manufacturing Co., Milwaukee, Wis., died suddenly on January 29. He was 56 years of age and had been president since 1942. He joined the company in 1909 as an errand boy. Within a short time, he entered the milling department as a tracer, and held the posts of draftsman and engineer before being named assistant manager in 1928. He transferred to the sales department after

Walter Geist

successfully developing the multiple V-belt Texrope drive. In 1933 he was named general sales representative for the general machinery division and six years later was elected a vice-president of the division. Early in 1942, Mr. Geist was selected as executive vice-president and in May of that year was elected president. He was awarded many honors during his eight and one-half years as president of the company. He received honorary doctor of law degrees from Marquette University and Lawrence College. The Michigan College of Mining and Technology presented him with a doctor of engineering degree. He was further honored in 1950 when he was presented with the Knights Cross, First Class, The Royal Order of St. Olav, by King Haakon VII of Norway, which is one of Norway's highest awards. Mr. Geist was also a member of the board of governors of Marquette University, a director of St. Olaf College and an associate member of the board of Northwestern University. W. A. Roberts, executive vice-president in charge of the Tractor Division of Allis-Chalmers, has recently been elected president.

OTIS WACK, vice-president in charge of engineering for the U. S. Gypsum Co., Chicago, Ill., passed away recently at the home of a daughter in North Hollywood, Calif. He was 70 years of age. Born in Lansdale, Penn., Mr. Wack graduated from Lafayette College in 1906 with a degree in civil engineering. He became associated with the U. S. Gypsum Co. in 1923 and was appointed a vice-president in 1946.

R. S. WILSON, president of the Big Rock Stone and Material Co., Little Rock, Ark., passed away February 7.

GEO. B. CHRISTIAN, JR., secretary to President Warren G. Harding during his brief administration, died February 9 at the age of 78 years, at his home in Marion, Ohio. There are perhaps some oldsters in the lime and limestone industry, who remember the White Sulphur Lime and Stone Co., Marion, Ohio, of which Col. George B. Christian, Sr., was president for many years. In his early years George B., Jr., was associated with his father, an old-time friend of Mr. Harding. When Mr. Harding was elected Senator from Ohio, George, Jr., went with him to Washington as his secretary and stayed with him to be presidential secretary.

During President Harding's administration some extensive changes and repairs were made to the White House executive offices, and considerable quantities of lime were used for plaster and stucco. Full of zeal for the lime industry the then somewhat younger editor of ROCK PRODUCTS went to see Mr. Christian with the bright idea of writing a story about this recognition of lime for such a notable job. Mr. Christian was very friendly and affable but, he said, of course such a thing was out of the question; no one could be permitted to so "commercialize" the White House, or anything relating to the office of the President.

We have never told that story before, but we were sometimes reminded of it when, during a subsequent Presidential Administration many nasty things were said about President Harding and "the Ohio gang"—yet the erstwhile White House incumbents certainly did not have the same scruples about commercializing the White House prestige to the tune of many hundreds of thousands of dollars in far less defensible ways.

IMPROVE YOUR COMPRESSOR PERFORMANCE

Different air compressor operating conditions give rise to different operating problems—each of which calls for a special type of oil. By using the proper Texaco air compressor oil, you can overcome *your* difficulty, assure efficient compressor operation, reduce wear and maintenance costs. For example—

1. TO OVERCOME RUST, use Texaco rust-inhibited air compressor oils. They keep compressors and systems rust-free whether running or idle.

2. TO OVERCOME CARBON AND GUM, use Texaco heavy-duty air compressor oils. They have special detergent properties and are highly oxidation-resistant—will keep compressors clean under extreme operating conditions.

3. TO OVERCOME "WET CYLINDER" WEAR, use Texaco compounded air compressor oils. They resist the washing effect of moisture of condensation.

4. TO OVERCOME "NORMAL" OPERATING DIFFICULTIES, use Texaco straight mineral air compressor oils. They assure clean operation and reduce wear.

Your Texaco Lubrication Engineer will gladly help you select the right oils to assure you the most efficient compressor operation. Contact him through the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO ROCK DRILL LUBRICANTS EP are "extreme pressure" lubricants designed to give full protection against wear, to guard against rust, and to prolong drill life. Use them and you'll drill *more footage at lower cost.*

TEXACO

TEXACO Lubricants and Fuels

TUNE IN . . . TEXACO presents MILTON BERLE on television every Tuesday night. METROPOLITAN OPERA radio broadcasts every Saturday afternoon.

INDUSTRY *News*

The above photograph of the roadside sign at Lawrence Portland Cement Co.'s Thomaston, Maine, plant is indicative of the company's efforts to promote good public relations

Record Gypsum Demand

LLOYD H. YAEGER, general manager of the Gypsum Association, recently stated that gypsum production facilities are going to be put to the most severe test in the history of the industry. Record demand for gypsum is expected to result from the government's stepped-up rearmament program and holdover demands of the 1950 home-building boom, he said.

Military demands for more airplanes, tanks and guns, the manufacture of which requires gypsum casting plasters, the general building on the civilian front and special construction for the needs of military personnel and industrial workers will require quantities of gypsum products, as pointed out by Mr. Yaeger. He predicted, however, that barring labor shortages or other unforeseen circumstances, the gypsum industry will be able to meet both military and civilian requirements. The gypsum industry is now geared to produce more than 6 billion sq. ft. of gypsum board (lath, sheathing and wallboard), annually, a record-high production rate.

Boost Cement Prices

CEMENT PRICES have been raised 10c per bbl. in bulk and 13c per bbl. in bags, by many leading cement producers. The increase, which was effective January 1, was the second in three months. According to industry spokesmen, the higher prices were made necessary by increased costs of raw materials, coal and paper bags, employe wage increases and new pension plans which further increased producers' operating costs. Among the companies raising prices, as listed in a recent issue of *The Wall Street Journal*, were Alpha Portland Cement Co., Lehigh Portland Cement Co., Hercules Cement Corp., Lone Star Cement Corp., Universal Atlas Cement Co., Giant Portland Cement Co. and Whitehall Cement Manufacturing Co.

Building Product Plant

NEGOTIATIONS WERE recently completed in Bonn, Germany, between Prof. Ludwig Erhard, German Minister of Economics, and C. A. Carlen, president of the Swedish Ytong companies, concerning the establishment of Ytong plants in Western Germany.

Ytong is a porous building product made of lime with the admixture of other materials with high strength and heat insulating properties. One Ytong plant is already under construction at Watenstedt and is expected to begin production in April, 1951. The product will be made from light ashes, blast-furnace slag with small mixtures of lime.

A West German Ytong plant has also been established at Duisburg, in which the Swedish group participated. Several existing plants have taken out licenses for using the Ytong process, and it is planned to set up a Ytong plant in West Berlin.

Plant Expansion

WARNER CO., Philadelphia, Penn., has announced an extensive expansion program for its various plant operations. Plans include the addition of a 2nd rotary kiln to its Cedar Hollow plant in Chester Co., Penn.; addition of six new steel barges to its Delaware river fleet, and additions to its stone and lime plants. Warner also recently purchased large deposits of high-calcium limestone reserves in the Bellefonte area.

Two proposed U. S. Steel Co. units, to be built in the Philadelphia area, are expected to result in considerable new business for Warner Co. The company will be in a position to supply materials from either its Wilmington, Del., or Morrisville, N. J., plants.

Warner Co. reports that it experienced its best year in history in 1950. Sales were close to $20,000,000, compared with the previous record of $18,069,456 in 1949. Net earnings are expected to top the $3,000,000 mark.

E.C.A. Purchases Mica

THE ECONOMIC COOPERATION ADMINISTRATION recently purchased 150 metric tons of phlogopite mica, which is used in the manufacturing of radio condenser films, radio tubes and other electrical equipment and appliances. The purchase was made from Syndicate Du Mica De Madagascar and was the first Marshall Plan purchase of Madagascar mica. Three main sources of mica, which is a United States stockpiling item, are Madagascar, India and Canada. Current production in Madagascar is about 600 tons of splittings and block annually.

To Double Capacity

BRITISH COLUMBIA CEMENT CO., LTD., has announced plans to almost double cement production at its Bamberton plant on Vancouver Island by a $2,000,000 expansion program. Annual capacity will be increased from the present 1,350,000 bbl. to 2,000,000 bbl. A new kiln to supplement the three in use is to be installed.

The decision to expand was taken after discovery of new limestone deposits, an estimated 4,000,000 tons, just northwest of the present quarry. At the plant's present production rate, this would be enough limestone to last approximately 12 years. The project is scheduled for completion in one year. Nigel A. Tomlin is president and general manager.

Peak Limestone Tonnage Carried on Great Lakes

A RECENT REPORT on the amount of shipping on the Great Lakes last season reveals that a record tonnage of limestone and a near record tonnage of iron ore and coal was carried on lake steamers. The report was issued by John T. Hutchinson, president of the Lake Carriers association, and indicated limestone shipments of 23,395,011 net tons. This compares with a total of 22,282,425 tons carried in 1948, and with 20,322,136 tons carried in 1949.

Gypsum Anti-Trust Judgment

THE SUPREME COURT sent back to a lower court an anti-trust judgment against U. S. Gypsum Co. and six other companies, with suggestions that would make the eventual decree against the companies much tougher. The high court reversed a judgment of the district court for the District of Columbia, but it agreed with the government's claim that the anti-trust decree as written was not stringent enough. Although the court only made suggestions to the district judges, these recommendations will undoubtedly be included in the final decree entered against the companies. Besides U. S. Gypsum, they include National Gypsum Co., Certain-Teed Products Corp., Celotex Corp., Ebsary Gypsum Co., Inc., Newark Plaster Co. and Texas Cement Plaster Co.

U. S. Gypsum and the other companies together produce and sell most of the construction materials made of gypsum in this country. They were convicted about three years ago of violating the Sherman Act by monopolizing and restraining trade in gypsum products in interstate commerce. Among suggestions of the high court that would affect the final decree are:

1. Injunctions against the companies' Sherman Act violations will be extended to include all gypsum products, instead of only gypsum board.

2. The defendants will be forbidden to engage in any of the restrictive practices in interstate commerce generally, instead of limiting the prohibition to the eastern part of the U. S., as first written.

3. U. S. Gypsum will be required to license "all its patents in the gypsum products field to all applications on equal terms" for at least five years. The original decree required only 90 days.

4. The government will be allowed to look at the books and interview officers of the defendant companies to determine if the judgment is being carried out.

5. The companies will be prohibited from taking action to set up delivered price, or basing point, systems that result in identical prices at given points of sale. (However, the court suggested a milder wording of the government's provision to make it possible for an individual company to meet competitors' prices without violating terms of the decree.)

The high court refused to extend the decree's terms to individual officers of the defendant companies, as the government had wanted. Also, it declined to interfere with the district court's cost assessments for the proceedings. The companies are to pay half of the court expenses—the government had asked that the companies be made to pay the entire costs.

Portland Cement Production

THE PORTLAND CEMENT industry produced 20,226,000 bbl. of finished cement in November, 1950, as reported to the Bureau of Mines. This was an increase of 12 percent compared with the output in November, 1949. Mill shipments totaled 19,791,000 bbl., an increase of 15 percent over the November, 1949, figure, while stocks were 32 percent below the total for the same month in 1949. Clinker production during November, 1950, amounted to 20,394,000 bbl., an increase of 14 percent compared with the corresponding month of the previous year. The output of finished cement during November, 1950, came from 150 plants located in 36 states and Puerto Rico. During the same month of the previous year 18,040,000 bbl. were produced in 147 plants.

Coming Conventions

March 17, 1951—

Concrete Products Association of Washington, Annual Spring Meeting, Construction Center, Seattle, Washington.

March 29-30, 1951—

Western Concrete Pipe Association, Annual Meeting, Hotel Fresno, Fresno, Calif.

April 2-4, 1951—

Autoclave Building Products Association, Annual Convention, Hotel Statler, Washington, D. C.

April 27-28, 1951—

Northwest Industrial Minerals Conference, Congress Hotel, Portland, Oregon.

April 30-May 4, 1951—

Materials Handling Exposition, International Amphitheatre, Chicago, Ill.

Shown above are 2 of the new ore-storage silos of the Milwaukee, Wis., plant of Western Mineral Products Co., Minneapolis, Minn. The company, a processor of vermiculite, also operates plants in Omaha, Neb. and Denver, Colo.

Transportation Tax Exemption

THE SOUTH DAKOTA CEMENT PLANT, Rapid City, S. D., is exempted from paying the 3 percent federal transportation tax on cement shipped from the plant, as recently ruled by the attorney in an official opinion. The opinion held that the statute exempting the government and its subdivisions from the tax also applied to the state-owned cement plant.

"The state cement plant is not an entity separate and distinct from the state of South Dakota itself," the opinion stated. "It has not been created as a body corporate with power to sue or be sued but is created as a department of the state government."

Cement Plant Nearing Completion

LONE STAR CEMENT CORP., New York, N. Y., has announced that it is now ready to begin operations at its new plant in Roanoke, Va. About 600 workmen were engaged in the construction of the 31-building operation, designed to be one of the world's most modern cement plants. The plant, which was built at a cost of more than $6,000,000, is expected to produce 4000 bbl. of cement per day.

The crushing plant at the quarry has a 500-t.p.h. capacity. Crushed limestone will be delivered via conveyor belt to the mill building which houses five ball mills and tube mills for the grinding of raw materials and clinker. Equipment also includes two 10- x 300-ft. rotary kilns. There are 15 cement storage silos, 26 ft. dia. x 120 ft. high, each capable of holding about 13,000 bbl. of cement. A packing house with four machines capable of packing 300 bbl. of cement per hr. is located next to the storage silos. The plant site will be known as Lone Star, Va.

Silica Sandstone

KANSAS STATE GEOLOGICAL SURVEY, in cooperation with the Kansas Industrial Development Commission, has explored the vast sand deposits in south-central Kansas in a search for new mineral resources. Large quantities of high silica-content sandstone in Barber, Kiowa and Comanche counties have been discovered. It is expected that the discovery of this new source of high-grade sandstone will revive the glass-making industry in Kansas. At one time there were 16 glass-making plants in the state, centered in Montgomery county, where natural gas was cheap and abundant, but lack of high-grade silica sand soon caused a decline in glass manufacture, until now there is but one glass plant in operation.

Honors 25-Year Employes

JANESVILLE SAND AND GRAVEL CO., Janesville, Wis., recently gave a banquet in honor of 12 of its employes who have been associated with the company for 25 years or more. J. K. Jensen, company president, presented these veteran employes with engraved watches.

The company began operations in 1907 to produce sand and gravel for shipment by rail to other cities. It has since expanded its operations to include ready-mixed concrete, concrete block and a full line of building materials. Present employment totals 75.

Limestone Meeting

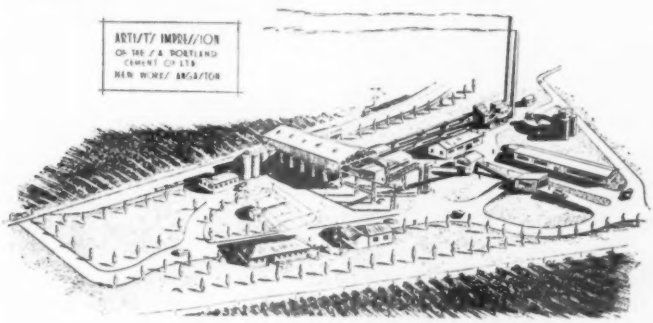
THE PROCESSED LIMESTONE ASSOCIATION at a recent meeting elected the following officers for 1951: A. K. Hausmann, The Kelley Island Lime & Transport Co., Cleveland, Ohio, president; Frank Witmer, The Ohio Hydrate & Supply Co., Woodville, Ohio, vice-president; Louis Kuenzli, The Kuenzli Quarries Co., Inc., Upper Sandusky, Ohio, treasurer; and Don Davis, Basic Dolomite, Inc., Cleveland, Ohio, secretary.

At the same meeting, plans were discussed for an advertising campaign for 1951, and also, the continuation of awarding two $200 scholarships to juniors and seniors majoring in agronomy at Ohio State University.

"WHAT WISE GUYS BEEN MONKEYING WITH THIS TEMPERATURE RECORDER?"

Expands Facilities

CALAVERAS CEMENT CO., San Francisco, Calif., is expanding storage facilities at its San Andreas, Calif., plant. Four cement storage silos with a total capacity of 75,000 bbl. are being constructed of reinforced concrete, using sliding-form construction. The silos will be 32 ft. dia. x 94 ft. high. The work is being done by The Rust Engineering Co., Pittsburgh, Penn.



Greetings from W. St.B. More

The S.A. Portland Cement Co. Ltd.
Brighton,
South Australia

This is a reproduction of a greeting card sent to Rock Products by The S. A. Portland Cement Co., Ltd., Brighton, South Australia

Cement Production in Canada

PRODUCTION of cement in Canada in 1949 was 15,916,564 bbl., valued at $32,901,936. This compares with 14,127,123 bbl. produced in 1948 at a value of $28,264,987. The average daily production in 1949 was 43,600 bbl., which is about 93 percent of the total daily-rated capacity of the plants.

Safety Contest

LONE STAR CEMENT CORP., New Orleans, La., plant, was among the 12 winners of the Metropolitan New Orleans Safety Council's industrial safety contest. The contest was for the 5-month period ending November 30, 1950, and Lone Star was one of the companies reporting an accident-free record.

Montana Phosphate Mine

VICTOR CHEMICAL WORKS, Chicago, Ill., has started the development of a phosphate mine and construction of a processing plant near Butte, Montana. The deposit to be mined has been known to exist for quite some time, but it had always been considered of too low a grade to be mined economically, since the rock contains only about 27 percent phosphate. The new factor which suddenly has given the rock economic value is the prospective availability of electricity at low cost, due to the development of the water and power resources of the Missouri river basin. By processing the rock in electric furnaces the elemental phosphorus can be recovered, and phosphoric acid, the basis of fertilizer, can be manufactured economically.

National Gypsum Expansion

NATIONAL GYPSUM CO., Buffalo, N. Y., announced recently that it has begun construction on a multi-million dollar board plant and plaster mill at its Medicine Lodge, Kan. plant. The present plant, acquired by National from Best Brothers in 1938, has been in operation for more than 50 years, producing Keene's cement and high grade plaster such as dental plaster, paper filler and plaster of paris. Expansion of the plant will include the installation of two calcining kettles and the construction of a board plant building over 800 ft. long. Also, new and improved equipment is expected to double output at the mine. In addition, storage facilities are being provided for paper and finished products, and an employe service building is being built to accommodate increased personnel. It was estimated that the company's payroll would be increased by about $500,000 a year when the new plant facilities go into production. The entire program was designed by the company's engineering staff, and work is expected to be completed by June, 1951.

HINTS and HELPS

PROFIT-MAKING IDEAS DEVELOPED BY OPERATING MEN

Truck Dumping

MANY COMPANIES realize that a side-dump truck has a considerable time-saving advantage over other type dump trucks, in that it eliminates

An adequate sky-hook assembly permits more efficient unloading by side-dump trucks

much turning, backing up, etc. However, many users do not supply a "sky-hook" adequate enough to take full advantage of side-dump units. One operator of a ready-mixed concrete plant in the South has the well-built sky-hook assembly shown in the accompanying picture. The truck hauls an 11-ton pay load and it can be unloaded by controls at the floor line.

Truck Grizzlies

MOST TRUCK GRIZZLIES are of heavy steel rails with the base of the rails mounted upward so that rock will not wedge in the openings. Others consist of I-beams of various sizes with the bore trimmed off by use of a cutting torch. One operator made a grizzly by welding steel shafting to a vertical steel member as shown in the illustration. Hard surfacing of the shafting adds materially to the life of the unit.

Top of grizzly is made of steel shafting

A Warning in Time

THERE ARE GROUNDS for an old belief among underground miners that before a tunnel or working place caves in, or a so-called "rock fall" occurs, nature always provides a warning. This warning is in the form of a little trickle of rock particles—a bad cave-in never comes as a single jolt, whereas if the ground "cries," a bad one is coming. At an operation where fines

Loader buried because slide warning was not heeded

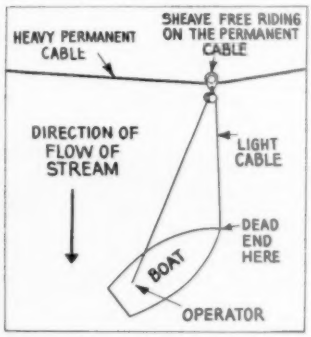
were being loaded with portable loaders, the machine had advanced straight ahead until quite an overhang existed. Then the top area started to spit down a few pebbles. The operator apparently was not aware of the warning this conveyed, or else he ignored it. As a result, a moment later the brow came down and buried the loader, as shown in the picture. The second machine was brought up to dig out the first one. Maybe the same thing happened to it.

Cable-Type Ferry Boat

THE PERSONNEL of a large perlite plant in central Oregon had an unusual transportation problem to solve.

Employes reach plant via the ferry boat

The plant operations and railroad are located on one bank of the Deschutes river, but the road to the plant is on the opposite bank with no bridge connections. For awhile an outboard motor on a suitable boat was used as a means of transportation across the river, but occasionally the motor failed and, after a near disaster in the swift current, the mine superintendent devised a new motive power for the boat that has proven quite satisfactory. A cable arrangement (shown in the accompanying sketch) was devised whereby the current of the river supplied the necessary motive power.

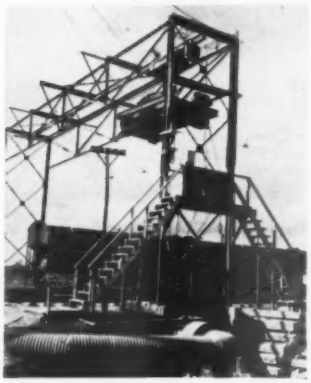


By keeping the prow of the boat at angle shown, the water current tends to move the boat in the desired direction

Unloading at Track Hoppers

AT A DAM under construction in the South, all aggregates are processed a considerable distance from the construction site and delivered to the job by rail. Storage facilities are available for the four sizes of aggregate used and one for the sand. To expedite car unloading three track hoppers are provided and each has an apron feeder under it. All feeders unload to the belt conveyor used for stockpiling.

To further speed up the unloading, a steel superstructure over the three tracks carries a Robins "shake-out" which can be lowered to the gondolas by means of a Robbins & Meyers electric hoist, and the shake-out does the rest.



"Shake-out" mounted on steel structure expedites unloading at track hoppers

Dustless Traffic

IN THE NORTHWEST where a large concrete dam is under construction, a rather novel idea has been developed in eliminating dust from travel on the gravel road used for hauling material from the quarry to the processing plant. The sand and gravel used for the aggregate is taken from below water level by means of a 10-cu. yd. Bucyrus-Erie dragline and is loaded into Euclid trucks. In the morning the loaded trucks follow conventional traffic rules, driving on the right side of the road; during the afternoon this traffic rule is reversed, the loaded trucks keeping to the left. The water dripping from the trucks keeps the road damp, and by reversing the direction of travel every four hours, the dust problem is eliminated.

Peg-Board Aids Record Keeping

AT A LARGE DAM under construction in the Northwest, Euclid trucks are used for delivering aggregate to the processing plant. Each truck is numbered. To facilitate accurate record keeping, a "peg-board" is provided at the dumping site. The peg-board is not

Metal tabs can be shifted from left to right to account for loads delivered

the conventional hole-and-peg type, but consists of a series of metal tabs that can be shifted from left to right, to account for each load delivered. The horizontal wire holding the metal tabs has a loop in it that is so designed as to prevent unwanted shifting of the tabs.

Stockpiling Setup

AN AGGREGATE PLANT supplying sand and gravel for one of the largest single construction jobs in the United States has installed a temporary stockpiling system, consisting of two units. One unit is for the larger sizes of gravel and the other for sand, and each is supplied material by its own inclined belt. Only one size of sand is processed, but for this one size, a blend is made of essentially five different grades so as to get the desired specifications. After the blend is made, three stockpiles are in use—one filling, one draining and one in current use.

As shown in the illustration, a walkway, suspended by steel cables, connects the two overhead galleries over the stockpiled materials. No belt traverses this section.

Gantry Cranes

AT A PACIFIC COAST PLANT two gantry cranes are used for loading trucks and bins. One gantry has a 135-ft. boom and the other a 100-ft. boom. The general plant layout is such that the gantries can also reach most of the equipment in the plant for repair purposes. For convenience, large machinery parts for the plant are stored

Gantry in foreground loads truck; one in background supplies black-top plant

alongside the industrial track on which the gantries ride. The units are also used for supplying material to the black-top plant, or they can supply a ready-mixed concrete batching plant.

Storage piles are built up by two separate belt systems

New Machinery

ROCK PRODUCTS

Dragline Dump Block

BAER STEEL PRODUCTS, INC., Auburn, Wash., is producing a free-running dragline dump block that is said to help cut the digging cycle of its ma-

Dragline dump block

chine. The block sheave turns on an oversize roller bearing to give full dumping force to the bucket load when its dragline is slacked off. To prevent fouling or fraying of the fast-moving dump line the housing throat is faired into the sheave ropeway. Housing and sheave are both of cast Fibraloy construction.

Trenching Bucket

GEORGE HAISS MANUFACTURING CO., INC., div. of Pettibone Mulliken Corp., York, Penn., has introduced a ¼-cu. yd. capacity heavy-duty trenching clamshell bucket, 16-in. wide. The bucket is furnished with a set of four heat-treated, abrasion-resistant, alloy steel digging teeth and 1¼- x 10-in. carbon steel digging jaws, and has a rated capacity of 7 cu. ft., with heaped capacity of 10 cu. ft.

Cement Unloader

BARBER-GREENE CO., Aurora, Ill., has developed accessories to adapt its

Unloader equipped for dry cement

Model 358 undercar aggregate car unloader and Models 362 and 363 portable belt conveyors to handling bulk cement as well as other dry-batch materials. The car unloader has been fitted with complete metal covers for the undercar section as well as the up-run. Collapsible canvas spouts with metal stiffeners can be drawn up between the cross ties and attached to the hoppers of the cement car. The discharge end is equipped with a metal, all-enclosed concentrating spout, said to direct the discharge into the hopper and to minimize dust. The conveyor housing encloses the entire length of the belt, except for a small opening at the foot end, and a concentrating spout is fitted at the head end to control escape of fines.

Adjustable Motor Base

LOVEJOY FLEXIBLE COUPLING CO., Chicago, Ill., has in production a lightweight, adjustable, tilting motor base for use with fractional motors up to

Lightweight motor base

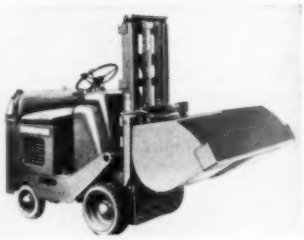
1 hp. The company states that this item acts as a belt tightener and is used for easy belt changing on Cone Step pulleys, as well as with variable speed pulleys. Speed changes can be made on this 5½- x 7-in. machine, while it is in operation.

Portable Lighting System

JOY MANUFACTURING CO., Pittsburgh, Penn., has developed a low-voltage portable lighting system for mining and construction work. Driven by compressed air, this system, known as the Joy-Lite, will develop an output of 250 to 280 watts with air consumption not exceeding 25 c.f.m. The unit weighs 48 lb.

Hydraulic Scoop

TOWMOTOR CORP., Cleveland, Ohio, has announced a hydraulic scoop accessory which picks up, transports and dumps bulk materials such as sand, cement and coal. Actuated by a two-way hydraulic cylinder, the acces-

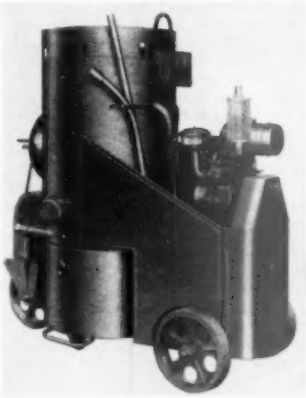


Hydraulic scoop accessory

sory is said to offer positive, fingertip control of the angle of the scoop which, with the lift truck's mast in vertical position, will tip 45 deg. forward for dumping and 30 deg. backward for carrying the load.

Portable Cleaner

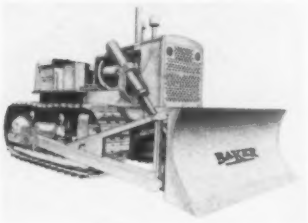
U. S. HOFFMAN MACHINERY CORP., New York, N. Y., has designed a portable cleaner said to provide the efficiency and economy of industrial vacuum cleaning for those applications where the cost of electric wiring would be excessive, for cleaning outdoor areas, or for large plants requiring cleaning in widely scattered locations. Designated as the Hoffco-Vac No. 50 for gasoline operation, the unit is powered by a 4-cycle, single-cyl., air-cooled engine rated at 6.8 hp., equipped with a flame-arrestor type muffler, and V-belt drive connected with a multistage centrifugal exhauster. Two sweeper cleaning is provided with 7½-cu. ft. dust container capacity.



Gasoline vacuum cleaner

Heavy-Duty Attachments for Bulldozers

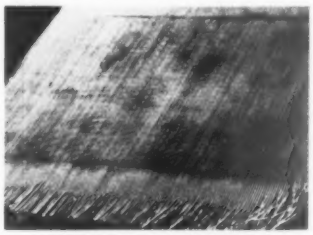
THE BAKER MANUFACTURING CO., Springfield, Ill., has announced three new heavy-duty attachments, specifically built to work with the models HD-9, HD-15 and HD-20 Allis-Chalmers tractors. The units are bulldozers, gradebuilders and root rippers and are available in both hydraulic and cable-controlled models, with finger tip control achieved through the short linkage between the blade control lever and hydraulic control valve.



Bulldozer attachment

Leather Belting

S. R. SIKES CO., Minneapolis, Minn., has manufactured a flat leather belt with controlled stretch that is said to prevent permanent elongation of the belt under load and thereby eliminates slipping. The manufacturer claims that the leather belting, reinforced with synthetic cords placed between the leather plys, combines the non-stretching advantage of fabric and the greater pulley grip of leather.



Controlled-stretch leather belting

Gyratory Crusher

ALLIS-CHALMERS MANUFACTURING CO., Milwaukee, Wis., has a new line of gyratory crushers for ore and rock products. Constructed of cast steel, the machine is said to provide increased crushing ability, improved crushing chamber, flexibility of installation and range of adjustment. The crusher's vertical discharge bottom shell has been shortened, resulting in a weight reduction and has permitted elimination of the diaphragm and its liners. The manufacturer claims this as an improvement because it prevents sticky materials from packing onto the diaphragm and finding their way through the dust seal. The crusher line includes the heavy-duty and standard-duty primaries as well as high-capacity secondary crushers in 11 different sizes.

Ear Protectors

FLENTS PRODUCTS CO., INC., New York, N. Y., is the manufacturer of "Flents anti-noise ear stopples," said to have served the industry for the past 15 years as effective ear defenders. Flents are small balls of cotton impregnated with oils and waxes and molded to fit any ear completely, thus sealing the ear and reducing industrial noise to safe levels. The manufacturer states that among the organizations using these Flents are: American Rock Wool Corp., United States Gypsum Co., and Fairbanks, Morse & Co.

New Truck Line

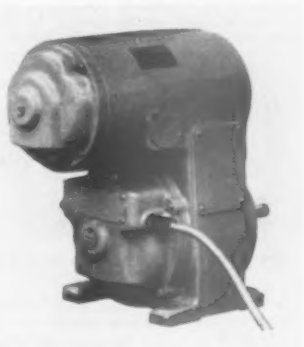
GENERAL MOTORS CORP., Truck & Coach Div., Pontiac, Mich., has announced its 1951 model light line of trucks. It is said that engineering changes have added extra hp. to both the 228- and 248-cu. in. engines, have strengthened front and rear axles on various models to take heavier loads, and have improved the brake design to provide more powerful performance and longer wear. In addition, there are circuit breakers in the lighting system on all models and an increase in the capacity of generators to 35 amp.

Voltage Transformer

SOLA ELECTRIC CO., Chicago, Ill., has announced the constant voltage transformer, used to guard against problems caused by fluctuating voltage. Noise from the mill is measured by the electric ear unit which is regulated so the power relay will close when the noise is at the exact sound level of maximum efficiency.

Variable Speed Drives

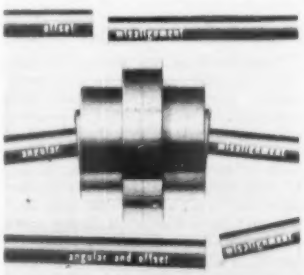
STERLING ELECTRIC MOTORS, INC., Los Angeles, Calif., has in production a mechanical remote control for Speed-Trol (variable speed) electric power drives. It is available in a variety of types: with extended flexible cable, extended rod with universal joint, right angle bevel gear with extended rod, chain and sprocket, or a combination of any or all of the above. It is claimed that this control permits speed drives to be more adaptable on applications where remote control from a distance is beneficial or necessary.

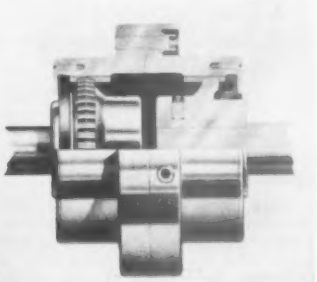


Remote control unit with extended flexible cable

Dihedral Coupling

AJAX FLEXIBLE COUPLING CO. INC., Westfield, N. Y., has introduced the dihedral coupling, designed to handle angular and offset misalignment up to seven deg. with a standard coupling, and special models for handling up to 12 deg. According to the manufacturer, dihedral surfaces of splines provide more tooth contact under operating conditions than any other shaped tooth. It is said that this new coupling saves time spent on lining up equipment and simplifies machine design by eliminating necessity for precision alignment of driving and driven shafts.

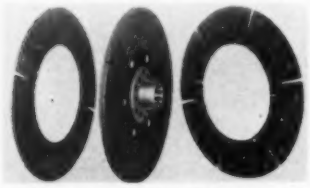




Left: Coupling to handle misalignment. Right: Cutaway view of unit

Clutch Plate Line

THE S. K. WELLMAN CO., Cleveland, Ohio, has announced a new line of matched set clutch plate combinations designed for extra heavy-duty truck, tractor and industrial equipment applications. Each set consists of an all-metal clutch plate, and two all-metal

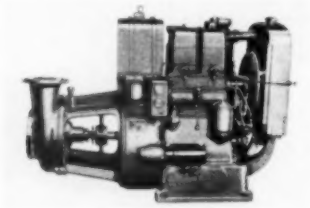


Matched facing set with clutch plate and friction facings

friction facings for mounting on the flywheel and pressure plates. It is claimed that, in this way, the operator gains the advantage of friction-to-friction performance, for the clutch plate operates against matching friction surfaces, instead of against the cast iron faces of the opposing plates. The manufacturer states that these installations insure longer clutch life, fewer adjustments, greater holding power and elimination of surface wearing on both plates.

Extends Diesel Line

NORDBERG MANUFACTURING CO., Milwaukee, Wis., has announced the addition of a 2-cyl. engine to supplement its Type 4FS1 single-cyl., 10- to 15-hp. diesel engine. The new engine, the 4FS2, rated at from 20 to 30 hp. within an operating speed range of 1200 to 1800 r.p.m., has a 4½-in. bore and a 5¼-in. stroke. The unit is complete, self-contained, ready-to-operate and is offered as an electrical generating set, pumping unit and with clutch or stub-shaft power take-off for direct connection or belt drives.



Two-cylinder engine

New Heavy Duty Truck

COOK BROS. EQUIPMENT CO., Los Angeles, Calif. maker of truck equipment, has recently introduced a new unit which the manufacturer says is a strong, lightweight, rugged, heavy-duty truck designed and engineered for heavy hauling where greater payload is of prime importance. It has a 5/16-in. alloy steel frame, 10 in. deep with 3½-in. flanges. Wheelbase is 191 in., and the unit is powered with a 6-cyl., Continental valve-in-head engine that develops 198 hp. at 2600 r.p.m. The driving axle is full floating, double reduction, with a rated capacity of 20,000 lb. It has a 5-speed transmission and a 3-speed gear splitter auxiliary transmission, and has air brakes. The unit is of 10,000-lb. capacity front axle; semi-reversible cam and lever and lever steering column. It can be used for hauling large semi-trailers and is available with either single driving axle plus a third axle if desired, or dual gear drive.

Air Vibrator

SPO, INC., Cleveland, Ohio, has announced its Series 79 air vibrators, available in eight standard sizes to meet a variety of applications and furnished with long or standard stroke piston. Designed for operation on standard 80 p.s.i. line pressure, the vibrators are recommended for use on

Air vibrator with long or standard stroke piston

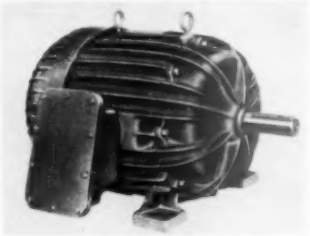
hoppers, tables, molding machines, concrete block machines and other types of production equipment. It is said that this type of controlled operation prevents accidental packing of hopper contents by premature vibration, conserves air power and provides for efficient service.

High Pressure Lubrication

STEWART-WARNER CORP., Chicago, Ill., is manufacturing two new design electric powerguns, of 25- and 40-lb. capacity, for use where air power is not available. It is said that the 25-lb. gun will deliver 14 oz. of light or medium lubricant per minute at 70 deg. F., will handle all greases that seek their own level and will develop 5000-p.s.i. pressure. The 40-lb. model is said to handle all types of grease; fibrous, heavy, or light. It has helix arm and worm gear priming, and delivers 5½ oz. of heavy fibrous lubricant per minute at 70 deg. F.

Explosion-Proof Motor

ELLIOT CO., Jeanette, Penn., has developed a line of explosion-proof motors of totally-enclosed, fan-cooled de-



Enclosed, fan-cooled motor

sign, said to be especially adapted for service in refineries, chemical plants, grain elevators, or wherever explosives are a hazard. Bearings are double-row width, prelubricated and sealed, the conduit box has large protective flange surfaces and motor leads are sealed in the frame, permitting rotation of the box to any of four positions, 90 deg. apart. The "sealedpower" design is available in N.E.M.A. frames 364 through 505.

Water Repellent Protection

SURFACE PROTECTION CO., Cleveland, Ohio, has produced a water repellent, colorless liquid, Silaseal, which is said to protect absorbent masonry walls against the penetration of rain and moisture. This substance can be used over surfaces of concrete, brick, concrete block, stucco or unglazed tile, coating the pores with a chemical which repels water, dirt and grime. The manufacturer states that Silaseal penetrates deep into the masonry, but allows air to pass through the coated pores.

Mobile Truck Crane

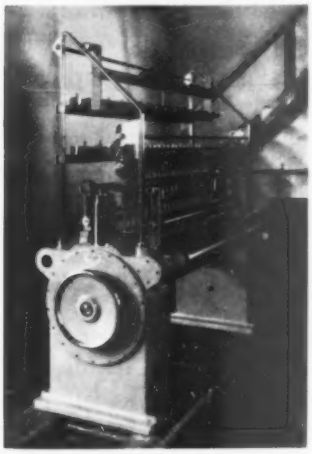
PITMAN MANUFACTURING CO., Kansas City, Mo., has announced a mobile truck crane, the Hydra-Lift, which can be installed on any type of truck

Crane with telescopic boom

and can be used with any make winch. Features include a telescopic boom which swings in a 180 deg. arc, or a 100 deg. lift, and a hydraulic system with an operating pressure of 1250 p.s.i., which can be run off fan belt or power take-off.

Machine for Making Insulating Matts

K. EKHOLM, Vastervik, Sweden, has developed a machine for manufacturing insulating matts of glass wool, rock wool and other similar material. The machine will produce matts of any



High production machine for shaping mineral wool matts

desired width and will sew insulating matts up to about five inches in thickness without difficulty, the manufacturer advises. It is provided with an arrangement for sewing matts for engineering and for insulating purposes as insulation for walls, floors and ceilings. The machine is further designed so that matts laid on or inside wire netting of iron or other material can be sewn with iron or metal thread. The seams are of chain-stitch type which means that each seam is sewn with one thread after which it may be coated with asphalt, pitch, resin or similar material to prevent thread from becoming loose. Speed of the machine is regulated by a variable gear arrangement providing a speed of from 40 to 120 r.p.m.

The machine is fully equipped and ready for installation, except for electric cable and distribution boards. While the standard machine is designed to produce insulation matts in measurements of centimeters (from 600 to 1200 mm. in width), widths in inches can be supplied on order.

The machine is sold through AB. A. Ekstroms Maskinaffar, Stockholm C, Sweden. The United States representative is Sven Fahlgren, Lake Archer, Wrentham, Mass.

Motor Starter

WESTINGHOUSE ELECTRIC CORP., Pittsburgh, Penn., has available a motor starter, with ratings up to 600-v, 7½hp. polyphase, 5-hp. single phase; or 220-v, 1½-hp. d-c. It starts, stops, and is said to provide overload protection for single phase, polyphase and d-c motors. Straight-through wiring is designed to facilitate installation and servicing.

Reinforcing Bar Chart

CONCRETE REINFORCING STEEL INSTITUTE, Chicago, Ill., has published a "Bar Card," covering the latest A.S.T.M. specification A-305 reinforcing bars, which serves as a reference chart of weights and nominal dimensions for the standard sizes of steel reinforcing bars from ⅛ in. through 1¼ in. Bar sizes are listed in both the old system (inches) and in the new (numbered) system, recently recommended by the U. S. Department of Commerce.

All-Purpose Loader

N. P. NELSON IRON WORKS, INC., Clinton, N. J., has introduced a new, all-purpose loader, known as the Loadall, which is said to handle gravel, coal, cinders, sand, snow, etc., without belt changes or use of special attachments. The machine is specifically designed for smaller concerns with truck loading problems and limited budgets. The Loadall travels at road speeds up to 6½ m.p.h. and loads heavy materials at from 1¾ to 2¼ cu. yd. per min.

Loader for various materials

Oil Feed Valves

OIL-RITE CORP., Milwaukee, Wis., has developed a line of angle sight feed valves for pressure or gravity oiling systems. It is said that these valves have extremely free-flow characteristics and allow the flow of oil to be visually checked and closely regulated. They may be used singly or gang-mounted.

Truck Cranes

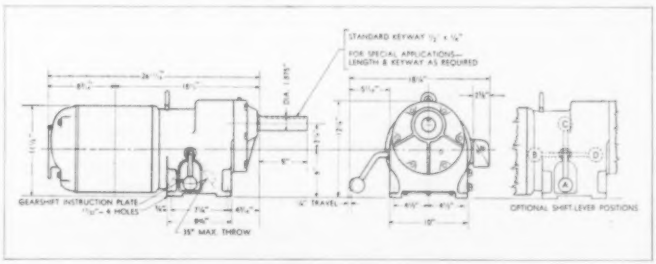
UNIT CRANE & SHOVEL CORP., Milwaukee, Wis., has announced the production of two truck cranes, models

Twenty-ton capacity truck crane

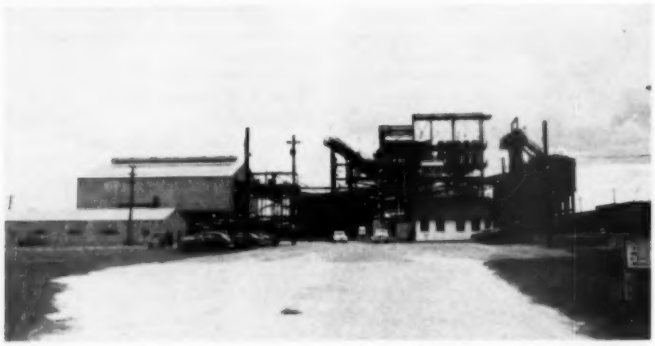
1520T and 1014. Model 1520T has a lifting capacity range up to 20 tons, ¾ cu. yd. in excavator service, and is mounted on a 3-axle, tandem drive crane carrier. The Unit 1014 crane has a lifting capacity of 10 tons, ½ cu. yd. as an excavator, and the possibility of one-man control with the addition of air-power steering.

Gearshift Drive

THE LIMA ELECTRIC MOTOR CO., Lima, Ohio, has in production a 5-hp., 1200 r.p.m., selective-speed gearshift drive, which incorporates both primary and secondary gear reduction and is designed to individually motorize machinery that requires a low range of selective operating speeds, combined with high radial load capacity. Overall dimensions, including 5-in. output shaft extension, are 31-11/16 in. in length, 12½ in. in height and 18¼ in. in width, including gearshift lever.



Selective-speed gearshift drive



Newest phosphate washing and flotation plant of the American Cyanamid Co., Sydney, Fla.

Washing equipment for clay separation, hydraulic sizing classifiers, froth flotation and classifier to reduce thickener area of particular interest in American Cyanamid Co. plant at Sydney, Fla.

LATEST RECOVERY METHODS HIGHLIGHT FLORIDA PHOSPHATE PLANT

By WALTER B. LENHART

THE PHOSPHATE INDUSTRY of the United States is one of the most important rock products industries because of the vital need for soil conservation and soil rejuvenation. As the years pass and our population climbs it will become more important to the individual welfare, because a threatened scarcity of food should bring an appreciation to the individual of some of the fundamentals of soil husbandry. Phosphate rock is one of the main additives for soil maintenance.

Numerically, the number of phosphate processing plants (or companies) is relatively small with a great number of the plants concentrated in a small area in Florida where the operations are usually of large capacity and are very efficient. Crude phosphate material is a relatively low priced commodity, and, as we have often pointed out before, the freight on the finished material to its place of use is usually considerably more than the mill price. With large tonnages to be handled coupled with availability of raw material and sales volumes, large capacity plants are possible.

Each year, the Florida phosphate fields have seen come into being new and larger capacity plants built along modern and efficient lines. One of the latest additions to the productive capacity of this industry is the Sydney plant of the American Cyanamid Co., the plant office of which is at Brewster, Fla. Sydney is about 18 miles from Tampa in Hillsborough county.

The new plant is of bolted steel construction and is designed to produce 500,000 tons of phosphate rock annually. Phosphate deposits vary from a few feet in thickness to 25 ft., of which about 35 percent is recoverable phosphate. The ratio of stripping to matrix (ore) is roughly 2½ to 1. This means that each year a considerable area of ground is mined. Nominally a plant such as this is expected to function for 10 years or more before the distance the matrix must be transported becomes economically unsound. With these considerations in mind, the designers have provided a plant with major segments which can be easily salvaged and moved to another site when the need arises. The plant is a neat and well engineered structure.

Mining

Mining practice here follows the general pattern used in the Florida phosphate fields. Large draglines are used. At Sydney a 17-cu. yd. dragline with a 175-ft. boom strips the overburden and deposits it in worked out portions of the pit. The same dragline recovers the matrix and dumps it near the suction of a large capacity sand pump. Hydraulic monitors or guns aid in disintegrating the phosphate material and flush it to the intake of a 16-in. pump. A second 9½-cu. yd. dragline is also available and is used to build up large retaining dikes behind which the tailings or washer debris are impounded. Both draglines are electric. The larger is a walker-type and the smaller is mounted on crawler treads. Water to the hydraulic guns is pumped by large capacity pumps located in a neat and strategically located pump house. The nozzle pressure at the gun is in the 150 p.s.i. range.

Most of the companies operating in the Florida field have several plants. These generally recover a wet finished phosphate material and ship it in open hoppers to the company's centrally located drying plant.

Plant Layout

The new plants built in this area during the past few years to serve drying or finishing sections consist essentially of three main units. The first unit is the washer whose purpose is to recover a clean plus 12- to 20-mesh material and ship it to the drying plant. The second unit is designed to separate the slimes from the minus 12- to 20-mesh product and to prepare this material for subsequent beneficiation. Slimes are usually considered to be the minus 150-mesh material so the fine sand product is essentially plus 150-mesh, minus 10- to 20-mesh. The third unit is the processing of this relatively fine material and in some of the newer plants gravimetric and froth flotation techniques are used to make the recoveries.

The new Sydney plant of the American Cyanamid Co. substantially follows this general plan, the main deviations being in the third unit mentioned because here froth flotation alone is used to recover the fine phosphate material and to bring it up to the phosphate content the trade demands.

There is a considerable variation in the physical character of the matrix as produced in different parts of the Florida field and the deposit at Sydney presented a somewhat different and difficult washing problem as preliminary investigation showed that the clay in the matrix was stiffer and harder to wash than most similar ma-

terials. The phosphate particles were also unusually soft. Before building the Sydney plant a large amount of preliminary testing was carried out for the purpose of devising a washing technique that would free the phosphate rock and fines from adhering clay, and at the same time not reduce the fineness of the value portions.

These tests were made in the laboratory on samples from the field secured by a ¾-cu. yd. dragline. The tests embraced a combination of soak periods and scrubbing in a company-designed scrubber. The tests brought out that an early reduction in size of the matrix was desirable and that a reduction in the particle size of the matrix to 1 in. or less 30 min. before the start of scrubbing will reduce by 80 percent the amount of mud balls remaining after 15 min. scrubbing. This experience might be used to advantage by some aggregate producers who have clay as a contaminant. If the size is not reduced early, soaking periods are not much of an advantage.

The process as eventually devised was built around a preliminary scrubbing, an early reduction in size, then additional scrubbing. The scrubber used is referred to as a "mud hog" and consists of a ¾-in. punched plate with ¾-in. openings ahead of four 28-in. dia., cross-shaped impellers rotating at 230 r.p.m. Each is powered by a 50-hp. motor. This set-up means that the plus ¾-in. material is agitated by itself. Later, this product is recombined with the minus ¾-in. material.

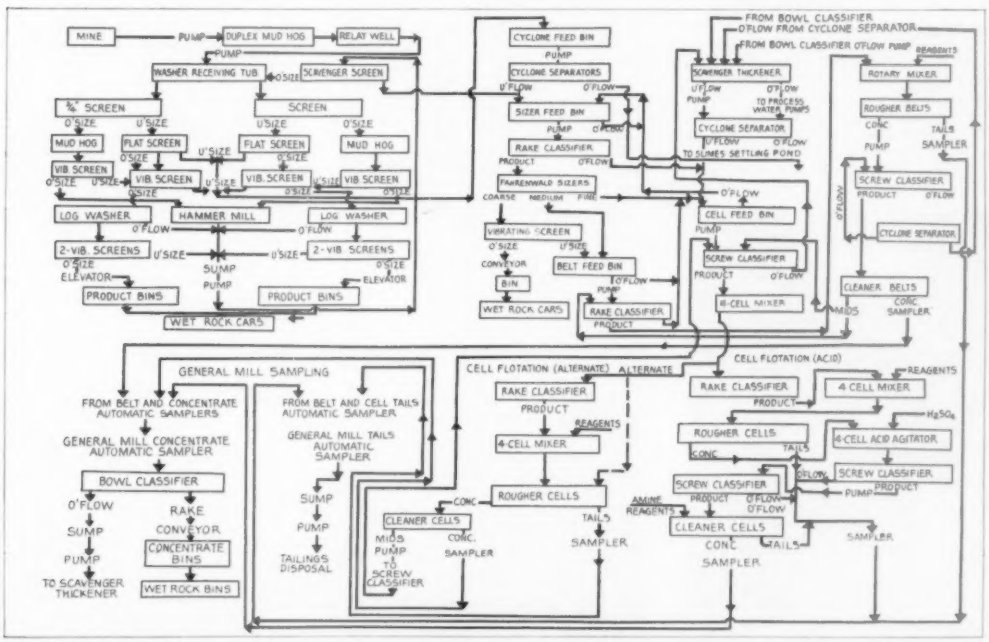
Scrubbing - Washing

At this plant, the matrix is first picked up by the 16-in. sand pump and delivered a distance of about 750 ft. to the mud hog. This first pump also acts as a scrubber-disintegrator and the time required for the pulp to get to the mud hog is a soak period of appreciable duration.

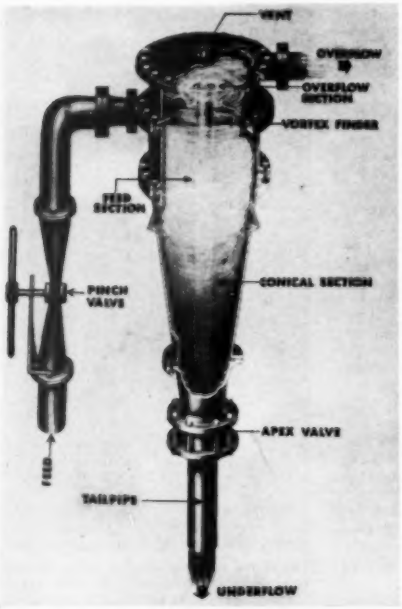
The mud hog assembly is mounted on heavy steel skids so it can be moved about the field by tractors. The matrix, after passing through the mud hog, discharges into a small pond, or so-called "relay well." The pond is roughly elliptical in shape and about 75 ft. long and 35 ft. wide. A second 16-in. sand pump identical to the first one used picks up the material in the relay well and pumps it to the top of the new washer plant. The distance here is roughly 650 ft. with a vertical lift of about 70 ft. The pumps are direct-connected to 600-hp. motors. Water-sealed bearings are provided in the sand pumps, and the main wearing parts are Casite wear-resisting metal.

In the washer the general plan is again to screen out any remaining ¾-in. material and send it to a second battery of four mud hogs, after which the oversize is reduced to ½-in. by a hammermill. This material is then returned to the head end of the washing system. The final screens here have

Two of the mud hog agitators in the washing plant take the oversize from the initial screening and give it additional scrubbing



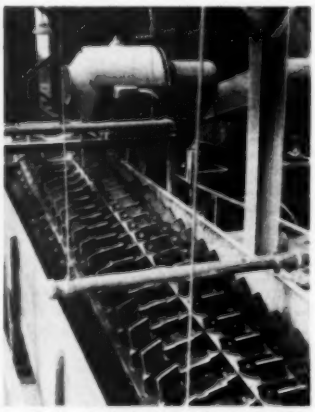
Flowsheet of Sydney phosphate plant. Plant sections are, top left, washing plant; top center, feed preparation; top right, belt separation. Lower left is mill sampling, and lower right shows cell flotation flow



Cutaway drawing of Dutch State Mines cyclone separator. Feed is regulated by pinch valve at left. Position of vortex finder controls separation point

1/32-in. openings and the flow is such that all plus 1/32-in. minus ¾-in. material is again washed in a battery of two log washers. The material is given a final screening and the plus 1/32-in. material sent to the cylindrical, hopper-bottomed shipping bins.

The minus 1/32-in. material from the various screens in the washing plant is next pumped to the section of the plant devoted to the sand-slime separation. Because of the involved nature of the processing, the details of the plant can be more easily understood by referring to the accompanying flow diagram.



Log washers scrub the minus ¾-in., plus 1/32-in. phosphate rock, after which it is screened through a 1/32-in. mesh screen and sent to the loading bins

The equipment used in the plant up to this point was supplied by the following companies:

Draglines — Bucyrus-Erie Co.

Sand pumps — Georgia Iron Works.

Motors—General Electric, Westinghouse and Allis-Chalmers.

Vibrating screens — All single-deck, 5- x 12-ft., Low-Head Allis-Chalmers screens.

Mud hogs—Made locally.

Log washers—McLanahan & Stone Corp.

Bins — Chicago Bridge & Iron Co.

Bucket elevator — Jeffrey Mfg. Co.

Hammermill — Dixie Machinery Mfg. Co. (No. 3620).

Water pumps—Allis-Chalmers & Layne & Bowler (deep well).

Sand-Slime Separation

The amount of water normally required for a phosphate treatment plant is large and all water used in the plant must eventually go to a tailing pond. This calls for an equally large tailing pond area, for all plant water is clarified and used over again. The American Cyanamid Co. did not have available unlimited areas to devote to storage of tailings so it became necessary to devise a sand-slime separation technique that would reduce the water volumes normally required.

The general plan revolved about first thickening the slime-pulp before sending it to the tailing pond. When the metallurgists made their calculations on what the thickener requirements would be, they came up with figures that indicated that nine 300-ft. diameter thickeners would be necessary if mining was conducted at the rate of 400 cu. yd. per hr. The volume of water indicated some 20,000 g.p.m. alone for dilution at the hydroseparators, plus 20,000 g.p.m. entering the plant from the mining and washing operations. Studies were then made to find a method that would avoid a large thickener installation.

To make a satisfactory sand-slime separation the engineers turned to the Dutch State Mines Cyclone which uses a new classification technique and one that the editors of ROCK PRODUCTS believe may find many uses in the processing of fine aggregates. The Dorr Co. has acquired the rights to the classification and thickening processes and has named the units "DorrClones."

The DorrClone is a cylindroconical classification unit which utilizes centrifugal force to accomplish the desired separation. It operates under pressure. It has found application in certain fields such as for hydroseparation, micron-size separations and the dewatering of deslimed products.

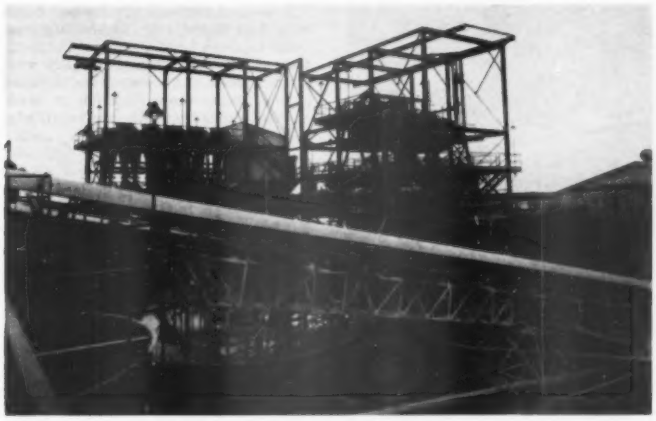
The D.S.M. Cyclone (Dutch State Mines) has also another main field of application for the separation of minerals and coal on the basis of specific gravity differences. These processes are known as the Dutch State Mines Cyclone Separator Processes. They constitute an additional metallurgical tool which complements the heavy-media separation processes. (See October, 1948, issue of ROCK PRODUCTS for additional data on the heavy-media separation processes as applied to the rock products industry.) American Cyanamid Co. is the sole technical and sales representative for the Dutch State Mines Cyclone Separator Processes in the United States and in many foreign countries.

The 300-ft. dia. thickener at Sydney is a special type SSG unit. The picket type thickener rakes are vertical members and resemble a picket fence. They are built into the rake assembly so as to pass through the lower portion of the sludge blanket as the mechanism rotates. The resulting gentle stirring action channels the settled solids, rearranges the solid particles and releases occluded water which would otherwise remain trapped. It was said all types of Dorr thickeners could be equipped with this type of rake.

Cyclone Operation

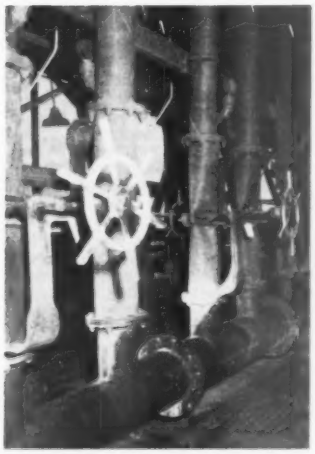
In very general terms, the DorrClone operates as follows: Feed suspension is introduced into the cylindrical feed section at the top of the unit and spirals downward. Centrifugal force, at the high velocities involved, segregates the coarse material, the discharge of which is automatically controlled by the apex valve. The fines, meanwhile, reverse their direction and spiral upward through the vortex finder into the overflow section and out through the overflow pipe. The "baffle" at the top of the unit is simply the division between the overflow and feed sections and the only connection is through the vortex finder. Feed pulp to the cyclones is controlled by heavy-duty pinch valves.

Tests on the Sydney matrix were first conducted on a 14-in. diameter cyclone with encouraging results. The capacity of the smaller cyclones when gallons of pulp per minute were considered was too low, so tests were conducted using a 48-in. cyclone. The final result was to install ten such machines, although only six are used at any one time. The machines were made in the machine shop at Acco.

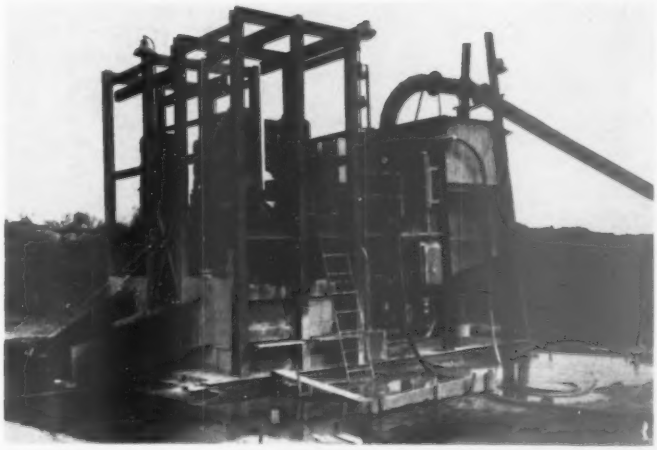


At the top are the Dutch State Mines process cyclones. Sizers are in center structure

Arrangement of the air-flow cleaner cells



Cyclone feed header, showing pinch valve arrangement used to control quantity and pressure of the cyclones

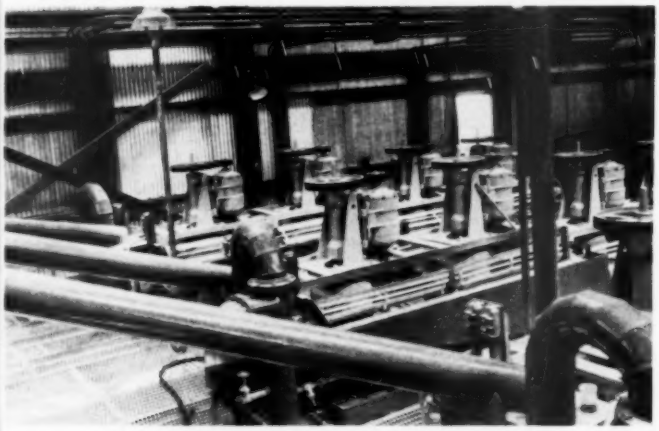


The field pumps deliver to the small hopper which in turn feeds the four-agitator mud hog, after which the pulp flows into a small pond or relay well. The mud hog makes a preliminary scrubbing of the pit-run phosphate matrix

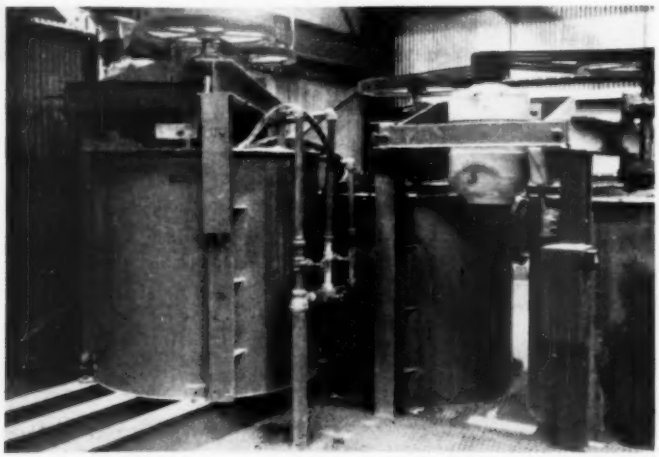
View of the 750-ft. thickener which uses 300-ft. dia. picket-type rakes, which functions as a scavenger thickener and is part of the water supply system

General view of the relay well showing the suction of the 16-in. pump in the well

This pump picks up the pulp from the first mud hog and starts it toward the new washing plant. The pump takes the partially-disintegrated material from the relay well



Rougher cells handle the finer-sized flotation feed. These are 56-in. units and there are three banks, with four units in each bank. They are used primarily as roughers



Here are shown the conditioners ahead of the flotation machines

The conical sections are rubber lined as it was found that excessive metal wear resulted in the unlined units. It was also pointed out that wear was greater near the apex valve because of the greater concentration of sand in that zone moving at relatively high velocities.

Test Data

Recently tests have been carried on in the district with a somewhat similar phosphate material by the Dorr Co. with good results. Typical of this latter type of data was the result of a five day sampling program and was as follows:

Feed—{13-29 percent solids.
{25-41 t.p.h. solids.

Minus 200-mesh in feed—18-40 percent.

Underflow—67-76 percent solids.

Plus 200-mesh recovery in underflow—94-97 percent.

Minus 200-mesh elimination in overflow—88-97 percent.

Overflow—4.4-6.5 percent solids.

The feed to the large units as now operated contains 16 to 20 percent solids and the lower spigot discharge is 55-56 percent solids. The waste effluent is practically devoid of any coarse material (plus 200 mesh, minus 20 mesh) and there is said to be a 98 percent recovery of the plus 200-mesh material. This indicates that any intermediate sizes between 20 and 200 mesh would be recovered at even higher percentages. The operators usually make the cut on the 150-mesh screen. Each cyclone handles 1500 g.p.m. of feed pulp and the pressure within the cyclones is held at 15 p.s.i. The discharge of coarse sizes from the cyclones is automatic.

By the use of the cyclones the slimes from the washer waste are sent to the slime-settling system without dilution except for the water used in mining and washing. The cyclones discard 75-80 percent of the slime without further dilution but as additional water is needed in the plant for washing, sizing and rinsing, the water in this slime had to be recovered and re-used. Thus a large settling area was still necessary.

Thickening Method

A relatively new thickening technique was developed to handle this slime pulp effluent which was made up of solids that were extremely fine. Settling tests using a standard type of rake thickener indicated that only 6 to 7 percent solids could be attained at the underflow of a conventional thickener. By the use of a "picket-type" rake mechanism the underflow solids could be increased to 14 to 16 percent. This type of rake mechanism does not increase the settling rate in the free-settling zones but by compaction in the compression zone seems to break up the floccules and to give a much thicker underflow.

Another novel feature of this 300-

ft. dia. thickener was that it was installed in a 750-ft. diameter tank or basin. With such a method of installation there would be a circular band some 225 ft. wide around the circumference of the thickener that could not be reached by the picket-type rakes. However, the operators felt that any settled material in this area would be extremely fine and before they reached a stage of around 6 percent solids (or higher) these solids would slough off or move into the orbit of the rakes. On the underflow lines to this thickener there is an arrangement of high pressure valves for controlling "kicker" water. These valves are only used to flush out clogged lines.

The operating results of this installation have been very satisfactory to date. The overflow is quite clear, the underflow is in the 14-16 percent range as tests indicated it would be, and the solids that settle outside the orbit of the rakes do move into the rake mechanism, because no build-up has been experienced, and the underflow at times carries considerably more solids for hours at a time than are being delivered to the thickener.

Pumping Requirements

The combination of DorrClones and thickener reduced the water required to a satisfactory degree so that plenty of pump capacity is available in the water supply pumping plant which comprises the following units:

No. units	g.p.m. each	p.s.i.	hp.
1	4,500	200-215	700
2	10,000	65	300
1	2,500	30-40	50
1	1,500	85	100
1	4,000	50	125

All above are Allis-Chalmers.

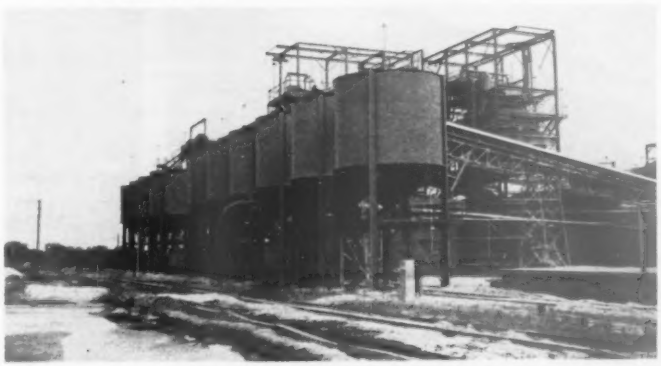
Thus there is 32,500 g.p.m. capacity available when all pumps are running. In addition to the above, a 3000 g.p.m. Layne & Bowler deep well pump is available for fresh water.

Equipment used in the sand-slime section was supplied by the following companies:

Bins—Chicago Bridge & Iron Co.
Thickeners, rake classifiers—The Dorr Co.
Cyclones—Made locally.
Vibrating screens — Allis-Chalmers Mfg. Co.
Pumps—Georgia Iron Works.
Screw classifiers—Western Machinery Co.
Pinch valves—Ferris Engineering Co.
Lubricated control valves—American Car & Foundry Co.

Flotation

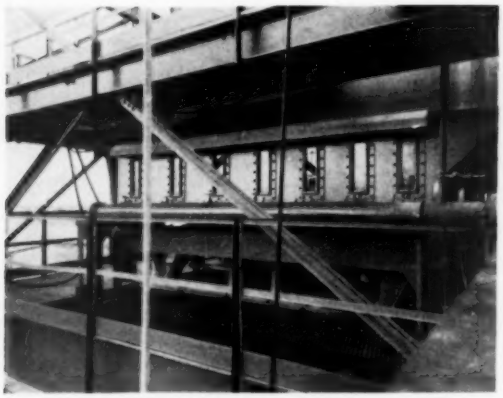
The third and final unit of the Sydney operation is the froth flotation plant. Additional beneficiation before actual flotation revolves about splitting the plus 150 mesh minus 20 mesh from the spigot discharge of the pressure cyclones into three sizes by means of six Fahrenwald sizers with

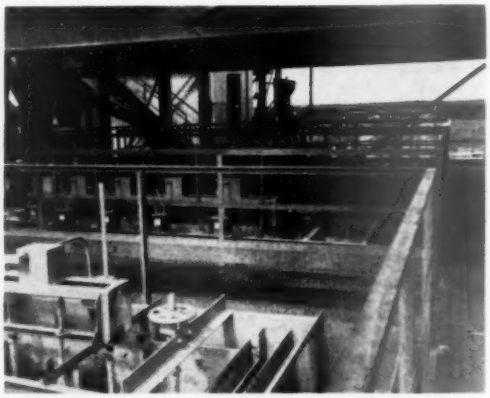


The final products bins are arranged in a neat row

A view from the top of a 750-ft. dia. thickener. The tall structure houses much of the equipment used for making the sand-slime separation

At the left is seen the bin arrangement. In the foreground is seen the bucket elevator and on lower right is a modern thickener





The two illustrations here show the arrangement of the sand sizers, of which there are six installed at the plant

each sizer having seven spigots. Coarse, medium and fine sizes are separated here. The coarsest size is dewatered on a vibrating screen and shipped to the drying plant.

Following the pressure cyclones in the sand-slime separation section, and in the float plant, are two spiral classifiers (one is a 78-in. dia. machine), and two rake classifiers. These items of equipment help carry out the general plan here outlined, but more details can be obtained by referring to the flow diagram.

This section of the plant also uses to a considerable degree the previously discussed large diameter thickener (750 ft.) and this unit is hereinafter referred to as the "scavenger thickener."

Flotation Machines

The medium sizes from the Fahrenwald sizer are floated on a "belt flotation" machine similar to those described in the November, 1948, issue of ROCK PRODUCTS, p. 74. There are three rougher belts each 42 in. wide and 74 ft. long and two cleaner belts of the same length but 60 in. wide.

Concentrates from the rougher belt are thickened before cleaning. This involves a 54-in. spiral classifier. A 36-in. pressure cyclone separator similar to the 48-in. units previously discussed dewaters and deslimes the overflow product from the above 54-in. spiral classifier. The overflow from the cyclone is returned to the scavenger thickener. The spigot product from the cyclone goes back to rougher cells.

The rougher belts produce a tailing product that is automatically sampled before disposal. The two cleaner belts produce a shipping concentrate and a middling product. The latter is returned to the belt-feed rake classifier.

The set-up on the flotation of the finer pulp from the Fahrenwald sizers (and several rake overflow products), after dewatering in the 78-in. spiral, is such that a non-amine float can be made as an alternate recovery system.

Acid Cleaning

The general plan here, if an acid amine cleaning operation is used, is to condition the fines in a 4-cell, 60-in. agitator-type mixer and make a rougher float in a bank of Fagergren flotation machines. There are three tanks of four cells each available. A tailing is made here. The rougher concentrates are then agitated with acid in a 4-cell mixer, dewatered twice in two 60-in. spirals (in series) and the coarse product floated in a bank of Air-Flow flotation cells (three 2-cell units). A tailing is also made here and it, along with the rougher tails and overflow from the two spirals, constitutes a bulk tailing which is automatically sampled before joining the general mill tails, where they are again automatically sampled.

When amine reagents are not used in the cleaner cells, a rougher concen-

Here are seen two clean belt flotation machines

The bucket elevator delivers coarser sizes of phosphate rock to the loading bins

The discharge from the pressure cyclones is automatically controlled by this mechanism

trate is made and the concentrate cleaned direct in the Air-Flow units. A tailings product is made from this rougher—none from the cleaners—the middlings are returned to the 78-in. spiral.

Product Sampling

All concentrates from the belt flotation machine and the agitator-type machines are each automatically sampled after which they all join and are again sampled to get a general mill concentrate sample. The general mill float concentrates flow to a large capacity bowl classifier and the coarse fraction is conveyed by belt to the shipping bins. The overflow from the bowl is sent to the scavenger thickener.

It will be noted that flotation tailings and the several types of flotation concentrates are each automatically sampled and that a general mill concentrator sample and general mill tailing sample are also obtained. This general mill concentrator sample is taken just ahead of the final bowl dewaterer that is used to prepare these bulked concentrates for final shipment.

Bin Storage

There are ten final product bins of steel construction and hopper-bottomed. These load to hoppered cars. A large capacity car puller is available for car spotting and it uses a 1¼-in. steel cable.

Bins used in the plant for intermediate storage are of the flat bottomed cylindrical type and rest at ground elevation. They are unloaded by jet-type arrangements similar to those used generally in the Florida phosphate fields. Control valves used between the jets and the offbearing pump are of the type shown in the illustrations and are lubricated. One type operates from a hand-wheel through a small pinion and gear arrangement; another type uses a worm gear that drives a quadrant-gear. This valve is remote controlled. All valves referred to here are of large diameter.

Most of the reagents used in the flotation plant are purchased in carload lots and a neat tank farm is available for the storage of the reagents. Adequate reagent pumps are available.

The plant was designed and built by the American Cyanamid Co.

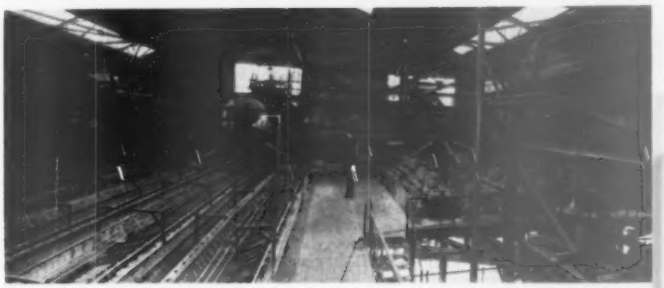
Equipment

Machinery items in the final unit of the Sydney plant were supplied by the following manufacturers:

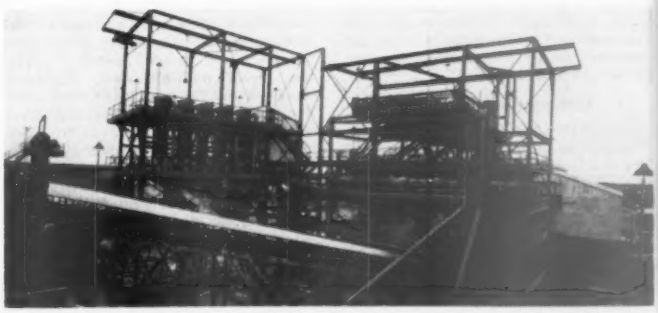
Bins—Chicago Bridge and Iron Co.
Rake classifiers, Fahrenwald sizers, and scavenger thickener—The Dorr Co.
Vibrating screens — Allis-Chalmers Mfg. Co.
Rotary mixer drive—The Falk Co.
Fagergren flotation machines and spiral dewaterers — Western Machinery Co.
Pumps—Georgia Iron Works
4-cell conditioners—Maddox Foundry & Machine Works
Belt flotation machines and Air-Flow flotation machines — Mineral Separation, North American Corp.
Geary-Jennings samplers—The Galigher Co.
Controls on apex valves of cyclones (automatic)—Republic Flow Meter Co.
Belt conveyors—Link-Belt Co.
Car puller—Stewart Machine Co.
Electric motors and controls—General Electric Co., Allis-Chalmers Mfg. Co., Westinghouse Electric & Mfg. Co.

Personnel

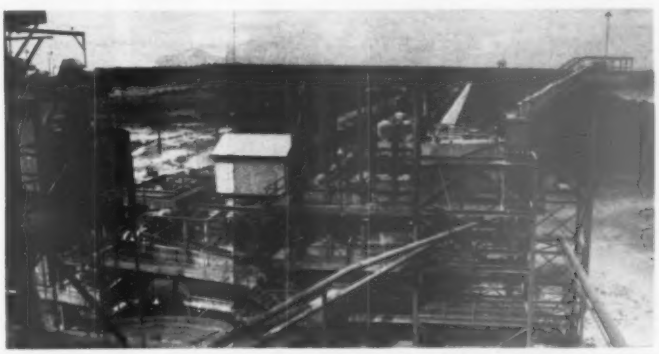
The staff of American Cyanamid Co. includes Arthur Crago, general manager; R. M. Haynesworth, general mine superintendent, at the Sydney mine; Grady Barnett, superintendent, and M. W. Chessen, assistant superintendent.



At left background is the mixer drum for mixing reagents for the rougher float belts; at the right are three banks of flotation machines that are the roughers for the finest size of phosphate material handled. At the left foreground are the rougher and cleaner belt flotation machines



The Dutch State Mines process cyclones that are used to make a sand-slime separation. The structure at the right houses the sand sizers



General view of the plant conveyors and surge piles shows orderly well-designed arrangement for handling of raw material

Stone Industry Optimistic for 1951

Convention covers labor relations, plant operation, government controls, markets in well-balanced program geared to fit war economy

APPROXIMATELY 700 ATTENDED the thirty-fourth annual convention of the National Crushed Stone Association and the sixth annual convention of the Agricultural Limestone Institute (a division of the N.C.S.A.) held the week beginning February fifth at Cincinnati, Ohio. Attendance was considered excellent for a non-exhibit year and in view of the fact that the recent strike of railroad switchmen was at its peak during that week. Some 50 producers, principally in the east, were absent due to inability to secure transportation.

In line with established policy, 1952 and every even year will have a machinery exposition in connection with the annual convention and the 1952 conventions will return to the Stevens hotel in Chicago. Arrangements for that meeting will be considered at the mid-year board of directors meeting to be held on July 13, 1951.

Convention Program

National Crushed Stone Association had a three-day convention and the A.L.I. also had a three-day meeting. Wednesday was scheduled for two joint sessions and the annual reception and banquet were held that evening. This year, more than the usual allotted time was provided for consideration of plant production problems with an entire session for N.C.S.A., and a second for operating men of both associations. Both of these sessions were well attended and were productive of many questions which were answered by discussion leaders and by others from the floor.

Maintenance was the principal subject for an entire session, in recognition of the fact that the crushed stone industry will be confronted with equipment shortages that will necessitate precautions in order to prolong equipment life and permit maximum operating efficiency. Preventive maintenance, with particular emphasis on auxiliary equipment such as drives, etc., was featured. In the second session, the relative merits of jaw crushers and gyratory crushers, surge piles versus close coupled plants, single-deck and multiple deck vibrating screens, and the drop ball versus jackhammers for secondary breakage were discussed.

Among subjects considered in the N.C.S.A. general sessions were the outlook for business in the year ahead; the reports of the engineering director, field engineer and administrative director; macadam construction; the part of highways in national defense; design of turnpike pavements; priorities; manpower; tests of bituminous concrete by the Corps of Engineers; wage and price controls; and employe relations. A special evening meeting for members of the accident prevention committee was held.

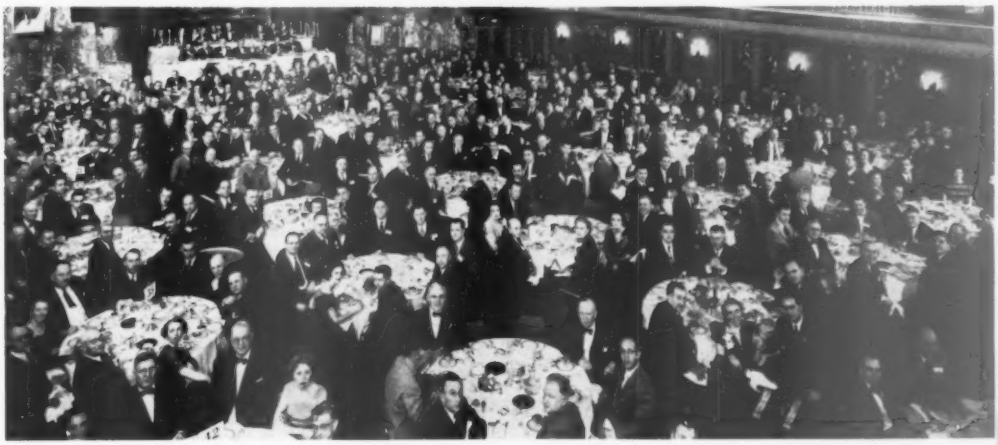
Instead of holding two meetings of the board of directors, one before the general convention and a second for the new board during or at the close of the meetings, a single meeting was held on Sunday, February 4. The new board had been elected by letter ballot well in advance of the convention in order to eliminate the need for two meetings. The Manufacturers Division conducted its annual business meeting at a luncheon. A Greeting Luncheon was held on the opening day of the convention and, on Wednesday, February 7, a joint luncheon was held for the N.C.S.A. and the A.L.I. Social events included the traditional cocktail party and buffet dinner, and the annual reception and banquet.

Presiding Officers

J. Reid Callanan, president of N.C.S.A., presided over the opening session, which summarized business conditions as reported in advance by

Bruce S. Campbell, Sr., Harry T. Campbell Sons' Corp., Towson, Md.; Ted Cooke, Lynn Sand & Stone Co., Swampscott, Mass., and W. Frank Alford, Consolidated Quarries Corp., Lithonia, Ga.

F. W. Mumma, Columbia Quarry Co., Decatur, Ill.; Harry A. Clark, Consumers Co., Chicago, Ill.; Norb Schwarz, Pontiac Stone Co., Decatur, Ill., and W. E. Kearn, Consumers Co., Chicago, Ill.



Annual banquet of National Crushed Stone Association and Agricultural Limestone Institute

the regional vice-presidents, and heard the annual reports of the Washington staff. The session opened with a showing of the film "The Last Forty Days," a U. S. Army combat motion picture of the Korean war, which was filmed under actual combat conditions.

Other session chairmen were E. F. Haberkern, Columbia Quarry Co., St. Louis, Mo., over the special session for operating men and equipment manufacturers; A. W. McThenia, Acme Limestone Co., Fort Spring, W. Va.; Warren C. Rowe, Rowe Contracting Co., Malden, Mass.; G. D. Lott, Jr., Palmetto Quarries Co., Columbia, S. C., over the joint session with A.L.I. for operating men and equipment manufacturers; and Wilson P. Foss, III, New York Trap Rock Corp., New York, N. Y., over a second joint session which considered employe relations.

G. A. Austin, Consolidated Quarries Corp., Decatur, Ga., presided for the Greeting Luncheon, which heard an address, "Today's World—Tomorrow's peace" by Rear Admiral Ellis M. Zacharias, U.S.N. (retired). P. E. Heim, president, A.L.I., was presiding officer for the joint luncheon given for both associations which featured an address by Harold G. Hoffman, former governor of New Jersey.

Aside from papers and discussion presented before both associations in joint sessions and reported herein, the sessions particularly for agricultural limestone producers are reported elsewhere in this issue.

Officers—Directors

J. Reid Callanan, Callanan Road Improvement Co., South Bethlehem, N. Y., was re-elected president of the National Crushed Stone Association to serve a second term.

The slate of regional vice-presidents elected were: Warren C. Rowe, Rowe Contracting Co., Malden, Mass. (*New England*); E. Eikel, Servtex Materials Co., New Braunfels, Texas (*Southwestern*); Wilson P. Foss, III, New York Trap Rock Corp., New York, N. Y. (*Eastern*); S. P. Moore, Concrete Materials and Construction Co., Cedar Rapids, Iowa (*Midwestern*); A. W. McThenia, Acme Limestone Co., Fort Spring, W. Va. (*Central*); L. J. Boxley, Blue Ridge Stone Corp., Roanoke, Va. (*Southeastern*); W. H. Wallace, Wallace Stone Co., Bayport, Mich. (*Northern*); and Anna R. Wilson, Granite Rock Co., Watsonville, Calif. (*Western*). Also re-elected were J. R. Boyd, administrative director; A. T. Goldbeck, engineering director; J. E. Gray, field engineer; and James Savage, Buffalo Crushed Stone Corp., Buffalo, N. Y., treasurer.

The board of directors elected by mail ballot, in addition to president J. Reid Callanan and the eight regional vice-presidents, includes: G. A. Austin, Consolidated Quarries Corp., Decatur, Ga.; H. H. Brandon, Melvin Stone Co., Wilmington, Ohio; Bruce S. Campbell, Harry T. Campbell Sons' Corp., Towson, Md.; W. N. Carter, National Stone Co., Joliet, Ill.; A. J Cayia, Inland Lime and Stone Co., Manistique, Mich.; T. C. Cooke, Lynn Sand & Stone Co., Swampscott, Mass.; Arthur F. Eggleston, J. S. Lane & Son, Inc., Meriden, Conn.; Wilson P. Foss, III, New York Trap Rock Corp., New York, N. Y.; R. G. L. Harstone, Canada Crushed Stone, Ltd., Hamilton, Ont., Canada; J. L. Heimlich, LeRoy Lime and Crushed Stone Corp., LeRoy, N. Y.; R. P. Immel, American Limestone Co., Knoxville, Tenn.; N. E. Kelb, Cumberland Quarries, Inc., Indianapolis, Ind.; H. C. Krause, Columbia Quarry Co., St. Louis, Mo.; R. T. Lassiter, Bryan Rock and Sand Co., Inc., Raleigh, N. C.; J. C. Lauber, Trap Rock Co., Minneapolis, Minn.; G. D. Lott, Jr., Palmetto Quarries Co., Columbia, S. C.; M. E. McLean, East St. Louis Stone Co., East St. Louis, Ill.; S. P. Moore, Concrete Materials & Construction Co., Cedar Rapids, Iowa; Paul M. Nauman, Dubuque Stone Products Co., Dubuque, Iowa; John M. Odenbach, Dolomite Products Co., Inc., Rochester, N. Y.; J. V. Owens, Eastern Rock Products, Inc., Utica, N. Y.; W. M. Palmer, Tyrone Rock Products Co., Ocala, Fla.; W. T. Ragland, Jr., Superior Stone Co., Raleigh, N. C.; H. E. Rainer, Federal Crushed Stone Corp., Buffalo, N. Y.; Russell Rarey, Marble Cliff Quarries Co., Columbus, Ohio; W. R. Sanborn, Kankakee Stone Co., Kankakee, Ill.; James Savage, Buffalo Crushed Stone Corp., Buffalo, N. Y.; Margaret McD. Smith, Central Rock Co., Lexington, Ky.; O. M. Stull, Liberty Limestone Corp., Buchanan, Va.; F. B. Thacher, Carbon Limestone Co., Lowellville, Ohio; W. H. Wallace, Wallace Stone Co., Bay Port, Mich.; W. S. Weston, Jr., Weston and Brooker Co., Columbia, S. C.; D. L. Williams, Virginian Limestone Corp., Ripplemead, Va.; Anna F. Wilson, Granite Rock Co., Watsonville, Calif.; W. F. Wise, Southwest Stone Co., Dallas, Texas; A. L. Worthen, New Haven Trap Rock Co., New Haven, Conn.

Representing A.L.I. on the board of directors of N.C.S.A. are P. E. Heim, Carbon Limestone Co., Lowellville, Ohio, president of A.L.I.; H. C. Krause, Columbia Quarry Co., St. Louis, Mo.; and H. A. Clark, Consumers Co, Chicago, Ill. Representing the Manufacturers Division are chairman J. Craig McLanahan, McLanahan & Stone Corp., Hollidaysburg, Penn.; Cottrell Farrell, Easton Car and Construction Co., Easton, Penn.; and B. R. Maloney, E. I. duPont de Nemours & Co., New York, N. Y.

Re-elected to the executive commit-

Board of directors meeting of National Crushed Stone Association

tee were G. A. Austin, Wilson P. Foss, S. P. Moore; Russell Rarey, Marble Cliff Quarries Co., Columbus, Ga.; W. S. Weston, Jr., Weston and Brooker Co., Columbia, S. C., and W. F. Wise, Southwest Stone Co., Dallas, Texas. J. Craig McLanahan and P. E. Heim, respectively, represented the Manufacturers Division and A.L.I. on the executive committee. Russell Rarey was re-elected to serve ex-officio on the board and on the executive committee of A.L.I.

Business Conditions

President J. Reid Callanan, in calling the convention to order, expressed his appreciation for an attendance that exceeded expectations in view of the railroad switchmen's strike, and then summarzied reports by the regional vice-presidents on business conditions during 1950 and the outlook for the year ahead. These annual reports have a great measure of authenticity because the report submitted to the president by each regional vice-president is the result of a compilation submitted to him from members throughout his region.

On the whole, the year 1950 was reported as favorable from the standpoint of volume of business. The New England area was particularly outstanding with a 40 percent increase in volume of business as compared to 1949, while holding the price level steady. In the eastern region, volume of sales increased by some 20 percent and there was a moderate increase in prices. The only reduction in volume of business reported was for the central region which had a decrease of 15 percent. However, the price level was maintained.

As would be expected, the predictions for the coming year varied widely in view of the uncertain world situation. While some believed it impossible to make any kind of national prediction as to the outlook for business, the consensus was that 1951 generally would be a good year for the industry, based on the expectation that highway construction and building would continue. One regional vice-president expects that airport and other defense construction would result in a volume of business equal to that of 1950.

As far as utilization of plant capacity is concerned, few plants operated to full capacity in 1950, and the average for the industry was 70-80 percent of capacity.

Distribution of sales in 1950 according to use varied widely within regions and between companies, but it was apparent that more of the national tonnage of crushed stone produced is for road construction than for any other uses. Building construction and railroad ballast were about equal as the next largest outlets for crushed stone, followed by chemical and metallurgical uses.

In some regions it was predicted that distribution of sales by uses would not change materially in 1951 while others believe that the sales for highway and building construction will decline. The inroads of competitive materials are being felt to an increasing degree, notably from slag in New York State. Competition from sand and gravel plants, particularly portable operations, is on the increase in some areas.

It is not expected that there will be many new plants built but many existing plants are increasing their output of smaller stone sizes. That trend has continued for the past several years.

All members are already being troubled or expect to have difficulties in obtaining equipment and repair parts. Availability of steel parts and rubber conveyor belting and tires is of greatest concern.

Of outstanding concern is the prospective loss of manpower and steps to be taken to counteract the pirating of men into other industries. Producers realize that the full impact of the national defense program in this respect is soon to come. Some producers believe the solution is in the adoption of more labor-saving production facilities while others believe it is already too late to do much in that way because equipment is already scarce. There is agreement that every effort must be taken to keep productive facilities in the best possible operating condition. Improving employer-employe relations, through equitable wage scales and adoption of labor welfare programs, was suggested as a practical approach to maintaining adequate personnel.

Engineering Director's Report

A. T. Goldbeck, engineering director, in his annual report, enumerated many of the typical problems confronting the crushed stone industry which require research and laboratory investigation. He also interpreted the kinds of laboratory work being conducted, in their relation to solution of problems presented.

He touched upon work being done in the development of test methods for both concrete and bituminous mixes. Crackups and map cracking of pavements are under study from the viewpoint of causes which must be determined. Absorption and soundness studies are being conducted in attempts to determine whether or not the coarse aggregates might be at fault. In this regard, it was mentioned that some rocks are porous and thus might have internal pressures built up within which could lead to expansion. Thermal expansion of rocks is

J. Reid Callanan, president, National Crushed Stone Association and president of Callanan Road Improvement Co., South Bethlehem, N. Y. (right) and J. R. Boyd, administrative director, National Crushed Stone Association, Washington, D. C.

being studied and possible reactions between various rocks and the alkalis in portland cement, as are the effects of freezing and thawing and drying and wetting in efforts to determine causes for loss of adhesion in concrete which affects durability.

Tests using the circular track in the laboratory to simulate traffic conditions are being used to advantage in the development of bituminous mixtures. Among the determinations derived from these experiments are optimum mix proportions, and much valuable data on stability, bleeding, slipping and resistance to moisture and traffic loads.

According to Mr. Goldbeck, some 50 research projects were underway in 1950, by the laboratory staff which consists of four men, ranging from Los Angeles rattler tests to complicated procedures and studies.

Mr. Goldbeck, in discussing some of the special problems presented for solution by member companies, mentioned a few typical questions submitted. Among them were the best mix for a given stone in concrete, the soundness of a rock to be considered for construction of a concrete dam, comparison of the characteristics of a particular stone with competing products, the soundness and durability of concrete made with a given crushed stone aggregate, the advisability of adding stone dust as a replacement, reasons for popouts in a pavement made from a specific aggregate, the crushing resistance of crushed stone as used for base construction, comparisons of competitive materials for railroad ballast, how to determine unsound material in the quarry, etc. He mentioned investigations being made of ledge rock in order to correlate with properties of the crushed stone to be produced.

W. R. Thacker, Southwest Stone Co., Dallas, Texas, and E. Z. Cole, General Crushed Stone Co., Quakertown, Penn.

Mrs. Gertrude S. Konouck, National Crushed Stone Association, Washington, D. C.; Miss Marguerite Small, Agricultural Limestone Institute, Washington, D. C., and Beatrice G. Gay, National Crushed Stone Association, Washington, D. C.

The fourth annual short course conducted in Washington at the association's laboratory was briefly touched upon and Mr. Goldbeck's report was concluded with presentation of a motion picture of the laboratory equipment and its applications by James M. Rice, Materials and Testing Engineer, N.C.S.A.

Mr. Rice personally took the motion picture and it proved to be an excellent demonstration of the laboratory procedure. Among the equipment and processes shown were physical testing of crushed stone; toughness, hardness and crushing tests; impact tests; the 300,000 lb. compression machine in operation; soundness and abrasion tests; freezing and thawing test procedure; specific gravity determinations; the preparation and testing of concrete specimens; slump tests; measurement of air entrained in concrete; and operation of the circular track for testing bituminous mixes.

The short course, which was well received and had been specifically acclaimed in the board of directors meeting preceding the convention, had the largest attendance of any of these sessions. Total registration was 144, including representation from 56 organizations and a total of 121 students.

A detailed report of the activities of the engineering director, reviewing the work in progress, accomplishments of the laboratory and the various outside activities through 1950 was submitted to the earlier meeting of the board of directors.

Field Engineer's Report

Field engineer Joseph E. Gray has, in the past year, devoted the majority of his time in rendering direct assistance to members upon individual requests. A number of special investigations were conducted including such subjects as quarrying methods, stone sand, specifications and investigations where there have been rejections of stone for reasons of excessive softness, chert, shale and other questionable materials. Some 75 percent of the association membership was called upon in connection with problems confronted by producers, and other activities have included attendance at meetings of state crushed stone associations and engineering societies.

Mr. Gray's report to the membership dealt almost entirely with the crushed stone industry's part in contributing to the construction of better highways at lower cost, and specifically to base course construction.

Requirements for base construction were reviewed, and the functions of particle shape in yielding the necessary frictional resistance for proper load distribution were discussed. Base course construction should be regarded as an integral part of flexible load construction, in Mr. Gray's opinion.

Mr. Gray presented slides to illustrate the effect of density of base courses on the distribution of load to the subgrade and to show the differences between open and dense graded bases in load transmission. The dense graded type was shown to distribute load most effectively to the subgrade. A drainable base should not have more than 5 to 10 percent fines passing the 200-mesh sieve and be uniformly graded, according to Mr. Gray, for optimum effectiveness and in order not to be affected by frost action.

A good specification should not only limit minus 200-mesh fines to a maximum of 5 or 10 percent but that frac-

Bruce G. Woolpert, Granite Rock Co., Watsonville, Calif.; Jos. E. Gray, National Crushed Stone Association, Washington, D. C., and Jack Thoenen, U. S. Bureau of Mines, Tuscaloosa, Ala.

K. K. Kinsey, Concrete Materials & Construction Co., Cedar Rapids, Iowa; Oran Hofstetter, Orrville, and Henry A. Huschke, Secretary, Agricultural Limestone Institute, Washington, D. C.

tion should not exceed one-half the amount of total material minus the 40-mesh sieve, he said.

Mr. Gray said that crusher-run material is not desirable because specifications for such material must be so open as to be meaningless and it is almost impossible to spread without serious segregation. Grading curves were shown for three recommended sizes of base coarse material, with 1-, 2- and 3-in. maximum size, respectively. In all three products, the minus 200-mesh material was in the range of 5 to 15 percent and between 10 and 30 percent for minus 40 mesh.

In conclusion, Mr. Gray pointed to the large potential tonnage for the industry in sub-base construction which, he emphasized, merits the attention of the industry in providing the best gradation of material and in attaining good construction practices. To emphasize the market, he said that 7000 tons of crushed stone would be required per mile for a 10-in. subbase beneath a standard 24-ft. highway.

Administrative Director's Report

J. R. Boyd, administrative director, in his annual report, briefly summarized developments in Washington and activities of his office in a number of matters of concern to the industry. In commenting on percentage depletion, he said that efforts will be continued in an attempt to secure benefits for the industry, which will necessitate work with a new congress and at a time when efforts will be to increase taxes rather than grant concessions.

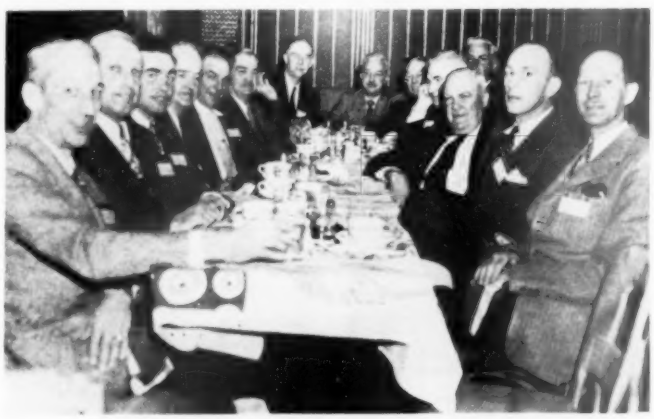
The association will oppose the six percent general freight increase now being sought by the railroads and will base its case on presentation of factual information to prove that the railroads will not gain revenue by increasing the rates for crushed stone.

According to Mr. Boyd, there may very soon be an attempt made for a wage determination under the Walsh-Healey Act covering the crushed stone industry. In the event action in that direction appears likely, he said that a questionnaire will be sent to the membership which he urged to be filled in whether or not a company comes under the jurisdiction of the Act. In that way only, he said, a minimum wage pattern for the industry can be developed that will be convincing. Without such factual information, he said that the government will proceed on the basis of other facts known to it.

The association continues to show increased interest in accident prevention and, through its accident prevention committee, is accelerating efforts to stimulate greater participation in the annual safety competition. The committee held several meetings in 1950.

Mr. Boyd said that the biggest job to be faced is the interpretation of rules and regulations coming out of Washington. At present, he said, it is impossible to determine the industry's place in the mobilization effort because the government has been so slow in formulating policy. It is anticipated that there will be many restrictive measures coming out of Washington that will be distasteful to the industry.

No priorities order similar to the P-56 mine order effective in the last war has evolved as yet, he said, but the industry's essentiality is recognized and the production of crushed stone will be included in a controlled materials and priorities program when issued.



New York Trap Rock Corp. men attend a dinner during the convention

J. L. McDermott, Marion Power Shovel Co., St. Louis, Mo.; Robert J. Lick, Marion Power Shovel Co., Marion, Ohio, and Richard B. Weimer, Barber-Greene Co., Aurora, Ill.

Seen above are C. A. Gustofson, Wilbur C. Kleinhans, James A. LeSuer, and P. D. Archibald, all of Callanan Road Improvement Co., South Bethlehem, N. Y.

Greeting Luncheon

Rear Admiral Ellis M. Zacharias, whose talk was entitled "Today's World—Tomorrow's Peace," had both pessimistic and hopeful views of our situation in the world today. The United States will hold the trump cards in any showdown with Russia, he declared, but only if we play them right. Up until Korea, war was likely between the summer of 1952 and the fall of 1956, the admiral said. That does not hold true now, though, for the Russian blunder into Korea showed them we would fight back. However, he continued, the United States made a terrible blunder in permitting the Korean war to start. If our Far East policy had been more far sighted and determined, there would have been no war, he said.

A meeting of Soviet officials in the Kremlin in 1949 brought the decision to wage war against the democracies —not the usual kind of war, the admiral declared, but one in which the Communist satellites would exert continuous pressure or else would actually fight. Because of this and other reasons Europe is a danger spot and must be unified, in Admiral Zacharias' opinion. When France balked at German rearmament that was the time for the United States to take a firm hand and influence the French to accept unification.

Rearming Europe would be for purely psychological reasons, according to Admiral Zacharias. He doesn't feel Russia will overrun Europe unless they begin to believe their own propaganda as did Hitler. In the first place, their industrial production is not sufficient to maintain a full scale war, and second, much of their industry and oil supplies are extremely vulnerable to attack. The Russian view, the admiral said, is that the U. S. will collapse economically by 1956, and then be overthrown easily.

Our propaganda has been totally ineffective in Europe, said Admiral Zacharias, who traveled there last year. This is primarily because our State Department controls propaganda and he feels it is continually embarrassed by this function. The only effective way, he said, would be to set up a separate agency in the government to handle all psychological activities (propaganda). Of the tremendous jobs facing such an agency, one would be to get Europe to have faith in itself and act immediately against the dangers of communism. Another would be to get the Chinese to turn against the Russians and help us. Bombing them with anything but leaflets would make this job hopeless, he said.

Admiral Zacharias, who was formerly in Naval Intelligence, had something to say about this country's internal security. Russian aggression is not our primary worry, he said, but the 50,000 communists and 500,000 fellow travelers in this country make civil defense a necessity. A system of air raid shelters is thus unnecessary; instead, the Air Force should put more money into its radar screen. The army should have complete control of all internal security, in the admiral's opinion.

Congress should conduct a secret investigation of our intelligence and security organization. All the mistakes, both diplomatic and military, in the past have been due to faulty intelligence, Admiral Zacharias declared, and thus it is necessary that we find the men who are responsible for these blunders and replace them.

Accident prevention committee held a dinner meeting

Macadam Construction

Fred E. Swineford, engineer-director, Macadam Pavements, Inc., Columbus, Ohio, narrated a motion picture made by his company entitled "Macadam Construction by New Machine Methods." His introductory speech reminded the audience that, since pro-

ducers like to sell all the sizes they produce, macadam roads provide a good outlet. The film showed uses of all sizes, including fines and crusher run. Many of the roads shown in the film under construction had a 6 to 8-in. base coat of crusher-run stone. Mr. Swineford stated that most new macadam pavements are rather standard now, and use crusher run.

Shown in the film were recently developed spreaders, graders, vibrators and rollers. Also shown were the methods that have been devised to improve construction practices with these machines and speed up construction.

Accident Prevention

The accident prevention committee report provided the information that standard accident report forms are now being prepared for sending to member companies. Any accidents would be reported on these forms, which it was said are very simple and quick to fill out, and then would be sent to N.C.S.A. headquarters for analysis. Periodic summaries would be sent out providing the analysis of all accident reports. Members could then take advantage of the combined experience of all. The plan will work only if all member companies cooperate; therefore, all were urged to report any accident immediately. All names of reporting companies would remain anonymous, it was said.

Highway Picture

"The Importance of Highways to National Defense" was the topic of Lt. Gen. Eugene Reybold, executive vice-president of American Road Builders' Association. His principal theme was that the country's economy in peace or war is so intimately wrapped up with the quality and extent of the highway system that a larger building program should be undertaken. His views were, first, that a speedy mobilization is necessary; second, there should be a long range program of maintaining civilian economy, since that is what we are fighting to keep. The world is counting on an economically strong United States, he said, and to keep this country strong highways have become increasingly necessary.

Roads in the last 20 years have not kept up with industrial expansion, the general reported. Then too, production of automobiles has outstripped road capacity. It has been impossible to keep up with the backlog of required new construction.

Wartime poses a difficult problem, the speaker pointed out, and he looked back in history. During World War II, he said, the highway system was not given proper recognition. Only some maintenance was undertaken, whereas major routes were neglected. This stemmed both from the shortage of materials and from the fact that the armed forces depleted the state highway department ranks.

There is a note of hope now, Gen. Reybold stated. The Bureau of Public Roads is doing a very efficient job of reviewing the nation's highway needs and is acting as a potent spokesman for the highway industry. The President has been asked for funds for continued highway needs. Construction is scheduled to start this year on a few access roads, according to the speaker. The need will increase as more military installations are opened. Federal aid for these and for essential civilian routes has been appropriated, amounting to about $470,000,000 a year for 1951 and 1952.

Gen. Reybold predicts a high level of highway work, barring a big change in the international situation. One great need now is a public relations job, he said. The intimate connection between highways and our national welfare must be pointed out to the public, a job which the ARBA has always done, as well as providing coordination for the highway industry. The association supports federal aid for an integrated highway system and for secondary roads, interstate system and access roads. It opposes diversion of highway funds to other purposes, he said. In conclusion, Gen. Reybold said the ARBA is also promoting improved engineering for roads, a contract system for highway bidding, and is attempting to improve the quality of student training.

Improving Existing Pavements

In the absence of O. J. Porter, chief engineer, O. J. Porter Co., consulting engineers of Newark, N. J., Charles W. Allen talked on "The Widening and Resurfacing of Old Pavements." Mr. Allen, highway research engineer for the Ohio State Highway Department, referred principally to an engineering study of Ohio's roads, which was made available March 1.

Ohio's highways are being widened from 16-, 18- and 20-ft. widths to 22 or 24 ft., Mr. Allen reported. A total of 3000 miles of surface are to be widened or resurfaced. These needs required a considerable tonnage of aggregates, the speaker pointed out: over 1,000,000 tons of bituminous concrete were used in 1950. The highway program is limited somewhat by Ohio's pay-as-you-go method.

Mr. Allen pointed out that it is advisable to widen and resurface rather than to build new pavement. The line, grade and finish condition of the pavement are factors to consider in making an engineering survey, he said. In addition, cross section and type of subgrade soil should be known. A condition survey usually gives enough information.

Ready-mixed concrete was used on two widening jobs. The truck mixer follows the spreader, in a method developed during the war to eliminate the use of forms involving the use of a scraper going alongside the widened part and building a berm.

H. L. Jackson, Trojan Powder Co., Allentown, Penn., and George L. Henley, Cowan Stone Co., Cowan, Tenn.

Priorities

Francis B. Speaker, chief, Maintenance, Repair and Operations Branch, Requirements Division, Defense Minerals Administration, Washington, D. C., was unable to attend to deliver his talk on the priorities situation. Instead, a short letter covering some of his intended topics was read by Mr. Boyd. In this he said that the Defense Minerals Administration is the claimant agency for mines and quarries. The government is headed towards the old Controlled Materials Plan. Until this time comes, spot allocations will be necessary. Interim assistance for emergency cases is being worked out, according to the DMA head. National Production Authority is the priority issuing agency, whereas DMA, as the claimant agency, drafts orders affecting the industry.

In commenting on the letter, Mr. Boyd said he didn't expect a materials control plan to be established for 2-3 months. In addition, he said he felt the crushed stone industry is in a more favorable position now than during World War II, since now the industry is named specifically in Regulation 1.

Bituminous Concrete

Charles R. Foster, chief, Flexible Pavement Branch, Waterways Experiment Station, Corps of Engineers, U. S. Army, Vicksburg, Miss., presented a paper, "The Practical Use of the Corps of Engineers' Tests on Bituminous Concrete."

Mr. Foster said that some black top roads showed signs of deterioration in one to two years and builders of flexible types of pavements often did not know early enough if they were doing a good job or not. He called attention to the lack of a single and quick method of testing black top materials that would indicate its stabil-

Redington Moore, O. E. Benson, and M. Bovee, all of General Crushed Stone Co., Easton, Penn.

ity. By means of slides, the speaker outlined a procedure to test hot mixes where the top size of aggregate was less than 1 in. He said the asphalt adjustment was most important and usually the optimum amount was often to "get a little too much," as lean mixes ravel too easily and an excess of asphalt causes bleeding.

The slides showed laboratory methods and equipment to make a test for stability and the method consisted essentially of compacting a cylinder of the mix under standard conditions after which the cylinder was put in a compression machine and load applied and a flow value obtained. The flow value, he said, was a good criterion of stability. The test takes about 15 minutes and the speaker gave an illustration where a small laboratory was provided at the mixing plant and results obtained before an appreciable amount of pavement had been laid.

Mr. Foster's paper was an abstract of Highway Research Board Symposium on Asphalt Paving Media, No. 7-B.

Manpower

Colonel Joel D. Griffing, chief, Manpower Division, National Selective Service Headquarters, Washington, D. C., spoke on "Manpower Problems as Related to Selective Service."

He outlined some of the mistakes made during World Wars I and II, recalling how registrants' numbers were put into capsules and the order in which these numbers were drawn was the order in which draftees were inducted. This procedure, he said, had no relation to a man's physical or mental condition. He also recalled how all married men who were in the National Guard at that time were invited to leave, only to be drafted back into the Army. At that time all men between 21 and 35 years of age were subject to the draft regardless of industry's needs.

Following World War II, General Hershey retained a small staff and over the intervening years a "pattern" of manpower induction was laid out. This consisted of first concentrating on age and physical condition of men 25 years of age and under. It was felt that men 26 years of age and older were established, many in skilled professions, and the bulk would be married and heads of families.

The date of birth of a future soldier was to be the basic starting point and men in the 25 year bracket would go first with the sequence going downward, i.e., those 24 years of age would be in the second group of draftees. After those 21 years of age are all accounted for, the next step would be to work upwards from the 26 year base age, in the event of an all-out war. Thus the oldest men will be in industry the longest. The pattern, he said, also takes into consideration the annual "crop" of young men becoming 21 years of age. Under the plan 900,000 men per year, with replacements, will be provided for.

He said the physical and intelligence tests required by the Army were ridiculously high and were not fair, pointing out that such a man as Daniel Boone could not have qualified. The Army apparently ignored the inherent ability of a man to take care of himself and at the same time dispose of an enemy, replacing these excellent requirements of a soldier with a lot of hocus pocus involving the ability to put round objects into square holes. He said that, at the start of recent inductions, 50-60 percent of the registrants were disqualified but many will be sent back for re-examinations.

Colonel Griffing virtually gave industry the green light on all men over 35. The 26 to 35 age bracket was compared to the yellow, or caution light, but those under 26 years of age were to get the red light to travel into the armed services. He cautioned industry not to expect to retain men under 26 years of age, pointing out we are now under universal military service, so industry must recognize it and govern itself accordingly.

He cautioned industry that if a company "files" an exemption claim on any employe, it must recall that it is not good card playing to play the aces on the easy trick, implying that one should not file an exemption claim on anyone unless the draftee in question had highly specialized abilities or talents that were obviously more valuable to industry than to the armed services.

The speaker was asked regarding the status of reserves, and Colonel Griffing said the Army should have reserves-in-fact on which it could draw in times of need, but he was not in a position to give more definite information.

Wage-Price Control

The third speaker was John C. Gall, Gall and Lane, Washington, D. C., general counsel, National Crushed Stone Association, who spoke on "Wages and Price Controls."

Mr. Gall said general rules are designed to cover broad cases and as a result many individual cases do not fit into the general pattern and these cause distress.

Congress, the speaker said, is going to give the nation wage and price controls, so industry and the people will have to adjust themselves to it. He pointed out that during World War II some 65,000 people implemented various control agencies.

The basic theme and the reason for price and wage controls stemmed from the need to control inflation, and he said that control of credit, and control of spending, make up the general pattern. Efforts should be made to induce people not to produce some items and thereby stimulate black markets in these items. Controls, he said, mean eventual rationing and we must face it again.

Mr. Gall pointed out the difference between wage and price controls. Wage control, he felt, was the simpler and, once established, it would tend to become looser, whereas on the other hand price controls would get tighter and tighter. The speaker also outlined the difference in the administrative set-up, pointing out that labor unions are represented on wage control boards, so a squeeze may develop, more wages on one side and the same prices on the other. The speaker also outlined the mechanics of the wage and price freezes as of the date of his talk, pointing out that things were changing so rapidly at Washington that it was difficult to appraise the situation accurately. We received the impression that changes were coming so rapidly that even before this appears in print, a new and different price and wage control situation may have developed.

Mr. Gall also outlined the reasons why soft coal miners got a $1.60 per day wage increase soon after the wage freeze went into effect, pointing out that a contract made within 15 days before the wage freeze went into effect was to go into effect after the freeze date. This apparently covered the miners' case.

Bituminous coal prices, he said, were higher during the summer of 1948 than at the time of the freeze, so that industry had an opportunity and the choice of going back to that price period—which they apparently did.

The speaker said the status of salaries was not clear. Some want the Treasury Department to handle that phase, but on the other hand, unions are very keen to know what salaries are paid to industry, so they want control of salaries to come under boards in which they have membership. Mr. Gall said a Labor Dispute Agency may be installed in a few weeks but there was no big labor dis-

pute on the agenda aside from the switchmen's "sick" walk-out.

During the brief discussion that followed Mr. Gall's talk, attention was called to the raid the government is making on office help.

Where a company has several plants, the question was asked whether or not the price at the plant having the highest price could govern the price at all plants? Mr. Gall said if all the plants had previously been governed from a central office, then the highest rate can be applied, but if the plants had previously acted individually, that the higher rate could not be applied.

Joint Luncheon

Harold G. Hoffman, former governor of New Jersey, was the featured speaker at the joint luncheon of N.C.S.A. and A.L.I. In his talk, entitled "Gripes and Grins," he griped about governmental regulations which are so poorly worded that they cannot be understood by those to whom they apply, and grinned about politics. But the chief thing he said he wanted to get over to his audience was the necessity for a revival of faith in the work we do, in the United States, and in this country's principles. There is a pressing need for the "we" spirit—"our" country, "our" government, etc. He also wished that business as usual would prevail as much as possible during the emergency.

Safety Awards

Mr. Hoffman presented safety awards provided by *Explosives Engineer* to the winning companies in the N.C.S.A. safety contest at the joint luncheon of N.C.S.A. and A.L.I. Trophy winners were: Hagerstown quarry of North American Cement Corp., Hagerstown, Md.; LeRoy quarry of General Crushed Stone Co., LeRoy, N. Y., and the Cedar Hollow quarry of Warner Co., Devault, Penn.

Certificate winners included: Bakerton limestone mine, The Standard Lime and Stone Co., Bakerton, W. Va.; Jordanville limestone quarry, The General Crushed Stone Co., Jordanville, N. Y.; Rock Hill trap rock quarry, The General Crushed Stone Co., Quakertown, Penn.; White Haven sandstone quarry, The General Crushed Stone Co., White Haven, Penn.; Auburn limestone quarry, The General Crushed Stone Co., Auburn, N. Y.; Middlefield No. 1 trap rock quarry, The New Haven Trap Rock Co., Middlefield, Conn.; Phillipsburg limestone quarry, The Laura Gravel and Stone Co., Phillipsburg, Ohio; Martha limestone quarry, Marquette Cement Manufacturing Co., Martha, Tenn.; Holston limestone quarry, American Limestone Co., Mascot, Tenn.; Marquette limestone quarry, Marquette Cement Manufacturing Co.; Cape Girardeau, Mo.; Plant No. 4 trap rock quarry, Southwest Stone Co., Knippa, Texas; Ames aglime and road stone quarry, Ray Cook Construction Co., Ames, Iowa; Berkeley limestone quarry, North American Cement Corp., Martinsburg, W. Va.; N. R. Garrett City road and agricultural stone quarry, N. R. Garrett City Quarry Co., Columbia, Mo.; Ripplemead hydrated lime quarry, Ripplemead Lime Co., Inc., Ripplemead, Va.; and Lamke agricultural lime quarry, Bramel Limestone Quarry Co., Washington, Mo.

Group of winners at presentation of safety trophies

Employe Relations

An extremely interesting discussion of employer-employe relationships was presented by Hiram S. Hall, vice-president, Bigelow-Sanford Carpet Co., New York, N. Y., before a joint session of N.C.S.A. and A.L.I. Mr. Hall was described as an expert on the subject, and certainly presented a factful talk which stimulated many questions from the audience. In his introduction, Mr. Hall said that one cannot avoid the subject of proper employer-employe relationships. Furthermore, he said, a company's attitude toward this and towards collective bargaining will largely determine whether or not it stays in business.

A. T. Goldbeck, engineering director, N.C.S.A., Washington, D. C., and L. J. Boxley, Blue Ridge Stone Corp., Roanoke, Va.

One point of view the speaker said must be faced is: what is the concept of responsibility to one's company? Are year to year profits the most important, or is there a long range program for the sound development of the company with respect to building executive leadership and strong labor relations? An idea of where a company is going is certainly preferable, Mr. Hall claimed.

The fact that collective bargaining is such a major part of doing business now requires the proper attitude towards labor, Mr. Hall said. Industry is 60 percent unorganized and 40 percent organized and is now in the mop-up stage. The Taft-Hartley Act has actually furthered the union movement by providing for union shop elections. However, the establishment of proper working conditions can prevent unions from being organized in such a plant, according to the speaker. Mr. Hall listed a number of attitudes he has found in management with respect to labor.

(1) The attitude of making trades or deals when dealing with union organizers, in order to get some concessions. Such a relationship is off to a bad start, Mr. Hall said.

(2) Give them what they want attitude—a policy of appeasement, which will result in the employes losing respect for management.

(3) Sweetheart shop—the get rich quick attitude: buy everything quick and hope to ride through peacefully.

(4) Unorganized shop—the attitude that "we don't have to worry because of our pensions, wages, etc." This doesn't mean much if the employes don't realize it, Mr. Hall commented.
(5) "We are right" attitude—a company with this in mind is always in trouble.
(6) Antagonistic school—"we hate labor, fight them to the finish."
(7) Self-righteous attitude — these don't know whether the foremen are carrying out policies or not.
(8) Mental coward—the "see my lawyer" type. Here Mr. Hall made a few remarks about the type of lawyer to hire for consultation purposes. It is disastrous to put a corporation lawyer in a position to deal with labor representatives, he said. A vastly different approach is required, making it a necessity that one experienced in labor law handle all contacts.
(9) "I'll take a strike" attitude—sometimes there are justifications for this step, but Mr. Hall advised no one to make such a statement unless he really is prepared to do so.
(10) "What'll I do?" attitude—wait until the last minute and be caught unprepared. Bewildered.

Labor law under Taft-Hartley is taking on some substance, according to Mr. Hall. Unions are now subject to suit for failing to deal in good faith. It is necessary for the labor steward to fulfill his obligations as an agent of the union. In addition, a body of common law is being developed in the field of labor law, by which settled cases are cited and applied to present disputes. Thus a positive approach is evolving, the speaker said. As an aid to understanding the principles underlying the settling of disputes the speaker recommended a book entitled "Code of Ethics and Procedural Standards for Labor-Management Arbitration."*

"Do you have a good basic labor policy?" Mr. Hall asked. He outlined the following steps to provide such a policy:

(1) Employes should have the right to organize and to negotiate for wages, hours and working conditions betterment.
(2) Unions are a basic element to be considered in any policy.
(3) It is the responsibility of management to give support to the proper relationship.
(4) Recognize equality of decision of labor representatives within scope of union interest. Too many employers don't know when to say "this is beyond the scope of the issue," however. Mr. Hall also commented that management should expect mutual respect from union members. This will only be true if workers keep their self-respect, he said. The strength of the company compared to that of the union bears greatly upon the respect. A strong company and weak union will probably result in very poor respect, whereas a strong company and strong union will probably bring mutual respect, if other conditions are good.
(5) Establish a program of employe relations. In discussions with the union, know what is a fact and how to recognize them. Then look for facts on the union side as well as on management's side. Also in discussions, agree on interpretation of facts—talk in terms employes can understand. Imagine yourself (management) sitting as judge, ready to make a decision that will be final and binding.
(6) Approach all conferences in a friendly, cooperative attitude. One member of a company should have the job of negotiating with labor representatives, and he should have tact and patience.
(7) Develop confidence by consistency. Consideration for the union and its problems is necessary.
(8) Seek common ground of understanding by giving all information requested and being cooperative.
(9) It is fundamental to avoid abruptness. Give notice to employes of overtime, shut downs, etc., as much in advance as possible.

J. H. Biles, Caldwell Stone Co., Inc., Danville, Ky., and C. W. Lowe, Cumberland Quarries, Inc., Albany, Ky.

After discussing this labor policy, the speaker described the nature of a trade union. It is (1) a principal with certain legal responsibilities, (2) an agent for a collective group of employes, (3) an institution, (4) a political body, and (5) a livelihood for paid union leaders. In regard to the last mentioned, Mr. Hall described the A. F. of L. type of leader—the business agent. He is two people, according to Mr. Hall, an individual and an actor. He puts on an act to get what members expect him to get.

Mr. Hall offered some suggestions on the technique of bargaining. There are two things to do before getting down to business, he said. The first is to have the union understand that management is bargaining in the overall. He recommended it be understood that if agreement is not reached on everything, nothing will be agreed to. A very forceful way of presenting a case is to envision what will happen if agreement is not reached. Union proposals should be discussed early in a meeting. Management's counter proposals can then be made in the next meeting.

Now is the time to mechanize completely in this labor shortage era, according to the speaker. The crushed stone industry is primarily a materials handling one, requiring much machinery. Labor's opposition becomes less and less when fear of displacement of workers is removed.

A fundamental rule of bargaining is that the president of a company should never negotiate a contract. Mr.

*"Code of Ethics and Procedural Standards for Labor-Management Arbitration," published by the American Arbitration Association, 9 Rockefeller Plaza, New York 20, N. Y.

Group of ladies being entertained at bridge party given by National Crushed Stone Association

Hall said that in trade terms he "gives the joint away." The company head provides the last court of resort ("take it to the president for O.K."). Some pointers in bargaining were also listed by the speaker.

(1) Talk facts, for double talk will come back to roost.
(2) Negotiator should control the meeting.
(3) Tell the truth.
(4) In the counter proposal, ask for more than it is intended to get and offer less than it is intended to give. This is called "backing into an agreement" and is a legitimate method, Mr. Hall said.
(5) Mean it when the final offer is made.
(6) Stick to principles — no high minded ideas.
(7) Time your moves very carefully.
(8) Caucus technique—Mr. Hall suggested negotiators sharpen up on poker playing ability. Negotiating is similar—when getting close to agreement, caucus.
(9) Packaged counter proposals, in which are wrapped up a few of the union's ideas and a few of management's, are oftentimes very successful bargaining devices.
(10) Always leave the door open for a last concession. Place union leaders in the position of being able to make the last concession.

In writing a contract, the following issues should be covered, Mr. Hall said.

(1) Union security.
(2) Management security.
(3) Grievance procedure.
(4) Arbitration procedure.
(5) Seniority provisions (tailor-made for each plant operation.)
(6) Wages and hours.

Many interesting questions were asked of the speaker following his talk. Some of them are given here, with the answers.

Q. What force will signed agreements or letters have?
A. Write down all agreements. Have it understood that none will be precedent-making unless they signed—no oral agreements. Precedent and practice have caused much trouble.
Q. What should be done about reopening of contracts for wage increases?
A. There is no objection to reopening a contract. In the first place there is a labor shortage. In the second place the company may make a gain. If the contract is not reopened the union may cause harassment. Contract reopening is also a good way to work in some of management's ideas, such as more machines.
Q. Is it a good idea to have a stenographer or a hidden recorder in negotiating with union representatives?
A. No, for many of the bargaining influences cannot be recorded. Then too, when negotiating has been going on for days and suddenly an agreement is reached, it is of no value to have a stenographer during the early part if none is available at the windup.
Q. How can one get the union to think your offer is the final one?
A. Adroitness is necessary. Packaged proposals are the most helpful, for some demands can be increased with these while others are decreased.
Q. Is the statement of a last offer bargaining in bad faith?
A. It could have been in certain situations. Also, one can lose face if it does not turn out to be the last. Mr. Hall paraphrased oriental philosophy of not permitting a union man to lose face and turning him against management's proposals.
Q. What is the first thing to do after a plant is organized?
A. Have a voluntary consent election to get some contract exceptions. Also, hire a professional negotiator to line up a proper contract at first.
Q. What can be done about a union's prolonging negotiations in the hope of going to higher authority and getting better concessions?
A. Mr. Hall said he had expected that question from the association. There have been a number of situations in which industries acting together were very successful in getting better concessions. He suggested that a committee of the association should explore the possibilities of industry-wide bargaining.

Banquet

The joint banquet of N.C.S.A. and A.L.I. was held in the Hall of Mirrors of the Netherland Plaza. The after dinner speaker was James E. Gheen, philosopher-humorist of New York, N. Y. He offered a humorous discourse entitled, "Little Do We Know."

SYMPOSIUM ON PRODUCTION PROBLEMS

AN ENTIRE MORNING session was scheduled as a joint meeting of operating men and equipment manufacturers for both the National Crushed Stone Association and the Agricultural Limestone Institute, with G. D. Lott, Jr., vice-president, Palmetto Quarries Co., Columbia, S. C., presiding. The meeting opened with a Technicolor motion picture with sound track called "Pattern for Survival" and was produced by the Cornell Film Co. in cooperation with the U. S. Armed Forces. It was a documentary film that dramatized personal defense against atomic attack.

The film recommended the wearing of white clothes and, during the first three minutes after an attack, to cover the eyes and to remain as secluded as possible during that time because those three minutes mark a highly critical time. It urged one to study his area so as to determine the best thing to do. During an attack, keep out of automobiles and remain near the center of buildings as much as possible. A portable battery-operated radio, first aid kits, fresh water supplies, flashlights, etc. were recommended as necessary items in personal defense.

The approach in the panel discussion of operating problems followed along the lines of some radio programs, with members of the panel presenting divergent views on basic subjects.

The four members of the panel were: Alfred W. Heitman, Inland Lime & Stone Co., Manistique, Mich.; W. Frank Alford, Consolidated Quarries Corp., Lithonia, Ga.; R. E. Sansom, American Limestone Co., Knoxville, Tenn., and E. Lee Heidenriech, Jr., consulting engineer, Newburgh, N. Y.

Crushing

The first subject discussed was jaw vs. gyratory crushers in primary crushing, with W. Frank Alford supporting jaw crushers and R. E. Sansom the gyratory crushers.

In discussing his position as regards jaw crushers, Mr. Alford said as follows:

"All primary crushing at the Consolidated Quarries Corp. plant is done with jaw crushers. One 48- x 60-in. double-toggle plate crusher is of the Blake type. One is a 30- x 42-in. single-toggle plate crusher with swing jaw on overhead eccentric shaft.

"In selecting a primary crusher of proper size and type, consideration must be given to the tons per hour required, the breaking characteristics of the stone, maintenance, installation limitations, if any, as to head room, and costs.

"If a jaw crusher of sufficient capacity to produce the tonnage and reduction required is compared to a gyratory, the gap requirement would necessitate a gyratory of considerable excess capacity. A gyratory of the same tonnage capacity as the jaw would produce a smaller product and would have a smaller feed area. This would require a feed from the quarry

of smaller broken stone.

"Stone that tends to break in slabs is not suitable to the jaw crusher.

"The installation of a gyratory requires more vertical height below the crusher as sufficient room must be provided to drop the bottom plate and remove the eccentric. Much greater clear head room above is required to permit lifting out the spindle and replacing mantles.

"The maintenance on a jaw crusher is much less expensive than on a gyratory. The stationary manganese plates are zinced in on our 48 x 60 and are not changed until they are completely worn out. All the manganese crushing plates are handled with a boom mounted on a flat body Mack truck, which is much simpler than the equipment required to handle gyratory spindles, mantles and spiders. The stationary and movable plates on the 30 x 42 are reversed when the lower half wears, so as to obtain maximum life from the plates. These plates are handled with the same hook we use in case of bridging in the crusher.

"Because of the force which the toggle mechanism can transmit, the jaw crusher can be built to handle extremely hard products not suitable to a gyratory.

"In cases of bridging which the suspended hooks will not break up, and with oversize rock too large for the crusher, we mud cap and shoot. The rock is cleared from resting on the swing jaw before the shot is made. In our overhead eccentric crusher, oversized stones are chained and removed and a suspended hook used on bridging.

"For a portable plant installed for one particular job a jaw crusher is much easier installed and more suitable for the job.

"The manganese wear on an overhead eccentric crusher is greater than in a crusher with the swing jaw on a fixed shaft. In the latter it is 0.3c per ton and the former 1.5c per ton."

R. E. Sansom, in support of the use of gyratory crushers in several instances, contradicted previous testimony stating that a gyratory has greater capacity for the same sized feed opening and gave a finer product. He said a feeder was not necessary and that a gyratory actually had two feed openings, one on each side of the yoke, so that alternate loads could be dumped to each side. He said a jaw crusher under similar conditions would be choked and that the maintenance on a gyratory crusher was less than for a jaw. He further maintained that over a long period of time, a gyratory was cheaper to operate, had a better lubrication system and with its circular motion had less moving parts. He believed the gyratory was fundamentally better designed as it was designed around a circle with no corner stresses as is the case with jaw crushers.

Mr. Sansom said the product from a jaw crusher was slabbier than that from a gyratory. He maintained that a gyratory, when choke fed, would operate efficiently and also would act as a feeder and if power should fail, the gyratory could be started under full load. He gave some cost figures where a dolomite was crushed; the stone had a L. A. rattler loss of 19-20 and contained about 10 percent silica. His cost figure was roughly ⅛ cent per ton but this did not include labor or power.

W. S. McHenry, superintendent of the Clinton Point, N. Y., plant of New York Trap Rock Corp., said he had a large gyratory crusher powered by a 250-hp. motor but he was unable to start it under load. Mr. Sansom confined his statement to "certain types" and suggested that more connected horsepower be used.

Irving K. Cox, Allis-Chalmers Manufacturing Co., asked if a reversing switch was on the 250-hp. motor and the answer was "yes" but that the crusher still would not start under a full load.

Bruce S. Campbell, Harry T. Campbell Sons' Corp., Towson, Md., suggested that the "hoist" motor was the key to why a crusher powered with this type of motor would start, and others would not.

Mr. Sansom said that the connected horsepower was important and, when a second producer from the floor said his gyratory would not start under load Mr. Sansom told of a large gyratory in a copper mine operation that used 60-ton cars, and if the crusher stopped the entire load was dumped into the crusher as it would start under these conditions.

Another producer spoke of using successfully a high torque motor on a tube mill where the starting load was high and of breaking a shaft on a gyratory because of excessive load conditions. Another said that "rocking" a crusher so as to get it started was an advantage.

Arthur Goff, Wallace Stone Co., Bay Port, Mich., asked for confirmation of cost data on jaw crusher maintenance previously stated by Mr. Alford and the figures we have quoted above were repeated. Mr. Lott, the chairman, thought the cost figures were in line, calling attention to the abrasion from granite rock that had about a 40 percent quartz content.

Surge Piles

The second subject for panel discussion was a presentation of the value of surge piles vs. close coupled plants with E. Lee Heidenreich, Jr., consulting engineer, Newburgh, N. Y., taking the affirmative for surge piles, and A. W. Heitman, general superintendent, Inland Lime & Stone Co., Gulliver, Mich., speaking for the close coupled plants.

Mr. Heidenreich said, in part: "... The minimum size of the primary crusher is usually governed by the size

J. C. Lawrence, Liberty Limestone Co., Buchanan, Va., and C. M. Sims, Campbell Limestone Co., Gaffney, S. C.

of the dipper on the shovels in the quarry and normally the primary crusher has a far greater capacity in tons per hour than the balance of the plant. Thus, in a close coupled plant, surges occur at the feed end and are gradually ironed out but not completely so and, therefore, much equipment must be designed for a capacity much greater than the average production rate of the plant.

"When the primary crusher is close coupled with the balance of the plant, all quarry delays caused by crusher jams are reflected in the plant production rate, whereas by having a surge pile with a feeder installed under the pile, the feed to the plant becomes uniform at the maximum plant production capacity. Thus, when there is a delay in the quarry or delay

Horace C. Krause, Columbia Quarry Co., St. Louis, Mo., and E. Lee Heidenreich, Jr., Newburgh, N. Y.

at the primary crusher, the balance of the plant and all screens continue to operate at their full rated capacity. This means that the screens in the plant have a known uniform load and surge loads are eliminated and, therefore, screening is much more efficient.

"With a known uniform rate of feed to the plant, screening problems can easily be solved and screening capacity be designed for this known capacity and, likewise, conveyors can be designed for the known uniform feed. In a close coupled plant all screens and conveyors must be designed for a maximum feed and operated at times at only part of this capacity.

"When a jaw crusher is used as a primary crusher, a feeder ahead of the jaw crusher will increase the production rate by almost 15 percent while, with a gyratory primary crusher, the opening is normally large enough to take the entire load of the quarry trucks and no feeder is required. With a feeder to a jaw crusher in a close coupled plant, a uniform rate of feed to the plant is maintained except when there are delays in the quarry and then the plant is running empty and, therefore, the feeder ahead of the primary crusher does not take the place of the surge pile following the primary crusher.

"The installation of a feeder ahead of a primary jaw crusher not only increases the average production of the primary crusher but decreases the waiting time of trucks and eliminates the use of truck bodies as feeders by dumping partial loads into the primary crusher. Thus, the feeder should reduce quarry haulage costs.

"Where a gyratory crusher is used as the primary crusher, the surge pile can always be located between the primary and secondary crushers as the product of the gyratory crusher is of such a size and shape that it will flow to a feeder and be carried on to the scalping screens ahead of the secondary crusher or direct to the secondary crusher. When a jaw crusher is used as a primary crusher, in many types of stone, the size of the product may be large and slabby and this material is difficult to handle. Therefore, it is the best policy in most cases, to have the product of the jaw crusher go over scalping screens with the oversize going to a secondary crusher and then from the secondary crusher to a surge pile.

"Since the surge pile is used to equalize the tonnage going to the plant, the capacity of the surge pile should be large enough so as to have sufficient live storage to operate the plant during quarry delays. If possible the minimum size of the live capacity of the surge pile should be equal to 16 hours of plant operation.

"If there is a breakdown at the quarry or at the primary crusher, this would allow up to 48 hours of operation of the plant without loss of production, by using a bulldozer to augment the live storage in the surge pile and likewise, if the plant should be down, quarry production can be maintained by bulldozing the stone in the surge pile and thus maintaining quarry production.

". . . the gain in production by using a surge pile varies from 10 to 20 percent which means a tremendous saving in costs. The installation of a surge pile means the installation, under average conditions, of a tunnel with a feeder and a conveyor belt and this installation is over and above what is required for a close coupled plant. However, in the layout of a new plant, the cost of this installation is offset by the fact that the conveyors to the plant and the screens required are smaller than those required for a close coupled plant and the screens required are smaller than those required for a close coupled plant where surges or maximum capacity through the primary crusher must be provided for. In a new plant it is always the best policy to provide for the installation of additional screens in the future and the speeding up of the conveyor belts by designing them originally for a low speed. Thus the plant capacity can easily be increased and in most cases it seems to become necessary within 5 to 8 years after a new plant is constructed.

"By having a surge pile independent of the quarry, it is very feasible to operate the plant on a 2 or 3 shift basis. Recrushing for small sizes can easily be done at night by incorporating the hookup from the surge pile to the fine crushers as stone is always available from the surge pile, even when the quarry is only operating in the day time.

"In some plants it has been found that large storage in the surge pile decreases the amount of finished stone that has to be stockpiled. In a close coupled plant equipment must be provided in the plant itself to take all of the stone that passes through the primary crusher and reduce it to the various sizes and each day there is an average fixed tonnage of each size produced. Some of these piles of finished stone do not move rapidly to market and I know of some plants that have large surge piles and vary their crusher setting, so as to produce the stone they may require, thus eliminating the production of those sizes that are not moving to the market at that particular time and thereby saving the storage costs of rehandling these particular sizes.

"During recent years, the crushed stone industry has become so conscious of the advantage of having a primary surge pile that most plants that contemplate moving the primary crusher closer to the quarry face are all planning on the installation of a surge pile when the move is made."

C. M. Sims, Campbell Limestone Co., Gaffney, S. C., and R. D. Davis, Sparta Lime Co., Sparta, Tenn.

Straight-Line Plants

Following Mr. Heidenreich's paper Mr. Heitman gave his views on why a close coupled plant was desirable and, in part, he said:

"We believe that a discussion as to the relative advantage of surge storage versus close coupled plants is purely academic as practically no two plants present the same problem and therefore each plant layout must be studied and designed to meet its own requirements. The question of using surge piles to an advantage can only be answered by a study of:

1. Quarry input and plant output and primary capacity — secondary
2. The number and percentage of the various sizes of product to be produced
3. Amount of storage desired—if any
4. The rate of material in versus the rate out
5. Type of equipment used and sizes.

"It is generally recognized that continuous straight line production layouts are most efficient and the nearest the stone producer can approach this is by the close coupled plant.

"In the design of any continuous processing plant, one of the important considerations is to balance the capacities of the various component parts of the operation. Excess capacity is very nice to have, but we all know that this luxury is usually denied us by the ever-present need to keep the cost down. This applies to both initial cost and operating costs. Each piece of equipment must be adequate to handle the required peak loads without excessive maintenance or shutdowns but extra capacity beyond this cannot be justified unless it pays its way on the cost sheet.

"The modern crushed stone plant

Clarence Stetser, New York Trap Rock Corp., Stoneco, N. Y.; George Foster, of that firm's Tomkins, N. Y., operation, and Luther F. Miller of the Newburgh, N. Y. plant

consists of shovels, rail haulage out, a system of crushers, screens, conveyors, and other pieces of equipment through which a steady flow of material must be maintained. The surge bin or pile is a device often thought of as a remedy to create this balance between the successive stages of a continuous operation. This is a misconception because if the balance does not exist, the surge bin cannot create it. There must be a steady flow through the entire system and the greatest economy is achieved only through closely coupled and well matched units. A surge bin inserted between two continuously operating units handling the same volume of material is a needless construction expense, consumes space headroom, and requires costly re-elevation of material. At Port Inland, we are putting 1000 tons of limestone per hour, 24 hours a day, through 14 successive operating units without the benefit of surge bins, and each piece of equipment is operating continuously above 90 percent of peak capacity. A surge bin at any point in this system would fulfill only the function of a chute to transfer material from one operating unit to the next.

"In most stone processing plants, however, there may be a number of useful applications of the surge bin which I should not care to dispute, particularly where the recovery of the material from the quarry and its treatment in the plant cannot be synchronized.

"One therefore cannot take a position categorically in favor of or against the use of surge piles in plant flow sheets. However, I do wish to emphasize that surge bins take up space, are costly to build and to operate and should not be installed unless their particular function is justified in each instance."

Mr. Heitman pointed out that with two shovels in the quarry a more uniform flow of rock was possible than would be the case where only one shovel is available; thus with two shovels a surge pile would be less desirable. He also pointed out that his operation in northern Michigan was a short seasoned one so they had plenty of time to get all equipment in first class shape for the operating season.

In the discussion that followed these two presentations, Ted Cooke said in his area (New England) it rained considerably and much of his trade was fussy and demanded clean stone. He was wondering how fine wet material would handle in a surge pile, since the stone from his quarry varies.

Mr. Heidenreich said, under such conditions, to run coarse rock on the damp days, or to scalp out all dirty stone, or possibly wash it and return it to the surge pile.

The question was asked from the floor if anyone was scalping out a minus 1½-in. product at the primary crusher and Bruce S. Campbell, Sr. said he was doing so.

Mr. Campbell said the panel discussion on crushers had ignored the roll-type crusher and that he had recently installed a McLanahan and Stone roll crusher and he delivers from it via a 210-ft. belt conveyor to a double-deck screen with 3-in. and 1½-in. wire respectively. The set-up is such that clean stone can be by-passed. He said some of his stone contained clay and dolomitic sands and the minus 1½-in. material was removed satisfactorily.

M. Bovee, General Crushed Stone Co., Easton, Penn., said that at one of his company's operations 600 tons per hour were being processed and the plant had a 48- x 60-in. jaw crusher. Most of the stone at this time was going to a large construction job and was hauled to the construction job in large trucks where the material was placed in a surge pile ahead of the final processing plant. The minus ¾-in. limestone was removed near the primary operation and was washed in a Hardinge scrubber with excellent results. He said there was a tunnel under the stockpile made of red wood and that trucks drove into the tunnel to load. (See January, 1950 issue of ROCK PRODUCTS, "Wet Process Manufactured Sand for Mt. Morris Dam," p. 133).

Screening

The third of the four basic subjects considered in the joint operating session was the comparative merits of single-deck and multiple-deck vibrating screens. F. J. Buffington, New York Trap Rock Corp., New York, N. Y., stated the case for single-deck screens and Nelson Severinghaus, Consolidated Quarries Corp., Decatur, Ga., presented the advantages of multiple-surface screens.

An experiment was tried in this debate, by which the two discussion leaders alternated in asking questions of the other and in making comments, using a loud speaker. Then followed discussion from the floor.

Mr. Buffington started off by stating that screening efficiency falls off with the addition of added screen decks. According to published technical data, he said that it has been shown when a second and third screening surface are added that the efficiencies of the two surfaces, respectively, are about 85 percent and 75 percent. He likely assumed the efficiency of a single-deck screen as 100 percent in making this comparison.

Mr. Severinghaus agreed that the single-deck screen is more efficient in sizing material but he pointed out that cost is the main factor and that, in that respect, multiple-deck screens are to be preferred.

Mr. Buffington then added that the sizing of the finer materials over the lower surfaces in multiple-deck screens brings up blinding problems and difficulties in making screen cloth changes. In answer to this, Mr. Severinghaus said that the number of decks has no bearing on blinding if the throw is adjusted properly. If the throw is correct for the top deck, he said that all decks of the screen should function properly. The time element involved in making screen cloth changes, in his opinion, is not sufficient to warrant use of single-deck screens.

Mr. Buffington said that multiple-deck screens require more of a metal frame which shortens the life of bearings. According to Mr. Severinghaus, there are cases where single-deck screens cannot be used at all economically, such as in rinsing service with stone of 2-in. size or larger. He cited a number of advantages to the use of multiple-deck screens other than those in the actual screening. Among them were fewer motors and conveyors and a simpler and more compact layout of plant which permits centralized control and facilitates repair throughout.

There was conflicting opinion as to the space requirements and importance of it. Mr. Buffington said that multiple-deck screens must be longer and therefore are subject to more wear whereas Mr. Severinghaus pointed out that a 2-deck screen does not require nearly the space for two

single-deck screens. He estimated that some 80 percent of the screens sold are for use in existing plants where space limitations are an important consideration.

Following this preliminary debate, a number of questions were raised from the floor and, in particular, concerning screen blinding. In answer to one question as to how to minimize blinding on the lower decks of multiple-surface screens in damp weather, it was suggested that slowing of the feed to the screening section would help, which could be easily accomplished through use of a surge pile.

Another suggestion was the use of a "reliever" screen to scalp out the material to be put over the screen decks with smaller openings. The use of knocker balls bouncing against the underside of a screen deck from a subdeck was mentioned. One producer told of using wet screens in one of his plants to overcome blinding but, he said, the problem of waste disposal has come up as a result. A manufacturer of screens told of work being done toward development of a method to heat screen cloth electrically and he indicated there is possibility of commercial application.

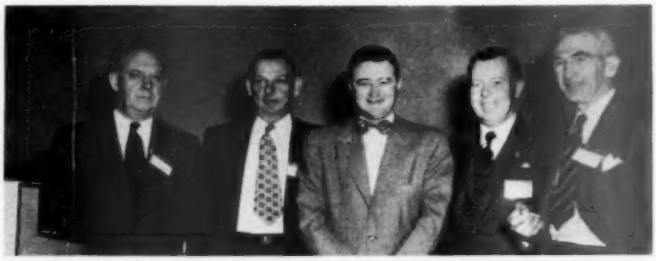
In answer to a question as to maximum number of screen decks in use, the answer seemed to be four. A large screen manufacturer said that 15 to 20 percent of his company's sales are single-deck units, 75 percent double-deck, 7-10 percent triple-deck and 1 percent four deck.

In reply to a question as to desired amplitude of vibration, a screen manufacturer said that manufacturers recently have increased it from ¼ in. to 5/16 in. or ⅜ in. and have adopted 18-deg. slopes with offset decks to compensate for the slope. He said that screens up to 16-20 ft. lengths will soon be manufactured.

Secondary Breakage

The next subject for discussion was the comparative performance of drop balls and jackhammers in secondary breakage. Discussion leaders were John Kawaske, Callanan Road Improvement Co., South Bethlehem, N. Y., and M. Bovee, General Crushed Stone Co., Easton, Penn.

Mr. Kawaske reported results of comparative studies made in a quarry with a 200-ft. face. At that operation, the primary blast leaves a small working area and a high muck pile. When using jackhammers and secondary blasting, six drillers, a powder foreman, a helper and a nipper were required. With introduction of the drop ball, three drill men are now required, a helper is no longer needed and the handling of steel and the power consumption have been materially reduced. Conditions do not permit drop ball operation exclusively. However, savings amount to 2½ cents per ton including powder, drill steel, fuse, caps, drill repair and labor. At a second quarry, the equivalent of 4½ men of six was cut out through substitution of the drop ball for secondary blasting.



Discussion leaders at the operating session are, left to right, the Messrs. Bovee, Kawaske, George Lott, Jr., Severinghaus, and Buffington

Mr. Bovee uses both the drop ball and jackhammers at various quarries of his company. His first experience with the drop ball dates back to 1909 at Lopez, Penn., before the time of the jackhammer. At one plant from 5 to 10 jackhammers were required in the production of 200,000 tons of crushed stone annually. Recently, production has been increased to 500,000 tons and a single drop ball handles all secondary breakage. A special blasting pattern was developed in order to use the drop ball with maximum effectiveness. With the advent of split-second delay blasting, the drop ball need be operated only three or four days a week.

At another quarry (trap) of the company, blasting of a 155-ft. face results in a muck pile up to 40 or 50 ft., which necessitates the use of jackhammers and secondary blasting.

In answer to a question as to experience with shaped charges, B. G. Woolpert, Granite Rock Co., Watsonville, Calif., told of his performance to date. He said that a five or six ton piece of stone is disintegrated in place without flying pieces and that he believed the practice had great promise. The only disadvantage observed thus far has been the degree of noise resulting.

The session concluded with a discussion of details of drop balls and hookups. Mr. Bovee uses a roller-bearing swivel at two plants. He believes the secret in prolonging cable life rests in the efficiency of the operator. Most drop balls in use weigh from 5000 to 7000 lb. and the cost is in the $1000-$2000 range.

An afternoon session of the first day was devoted to operating men and equipment manufacturers of N.C.S.A., with E. F. Haberkern, production manager, Columbia Quarry Co., St. Louis, Mo., in the chair. The subject selected for this emphasized "preventive maintenance."

The program was divided into two sections, the first section having scheduled speakers on subjects pertinent to preventive maintenance, followed by a round table discussion relating to phases of plant operation that are common to the industry.

Lubrication

The first speaker was Luther J. Burriss, chief of engineering and procurement, Weston and Brooker Co., Columbia, S. C. His subject was "quarry lubrication," but he did not confine his remarks to the quarry alone but reviewed the general subject from stripping through the entire plant operation. He took as a basis a typical flow sheet and carried through with suggestions of how each operating unit in a given section should be lubricated. He gave several good hints on lubrication such as the use of graphite added to a lubricant to nurse a sick bearing through a shift. Wagon drills, because of the high cost of parts, should receive special attention and he recommended that line oilers be used. He thought that a straight fluid mineral oil should be used for ball and roller bearings when possible.

Grease for bearings should "seal" good and he mentioned that lithium soaps may be important in the future.

He thought that oils should be changed on power shovels when the representative of a reliable oil company thought it should be changed. Motors and gears are often overlubricated, he said. He felt that for quarry transportation units, truck chassis lubrication was fairly well standardized.

For crusher lubrication, Mr. Burriss spoke highly of the use of external filter and oil cooling systems of the automatic types and emphatically recommended that this system of lubrication be used on the larger units. The speaker felt that lubrication of enclosed gears was no particular problem but that one should not forget to apply grease or oil as required.

Dexter Bullard, New York Trap Rock Corp., Newburgh, N. Y., in the discussion that followed, said that his company had tried several low temperature lubricants for cold screening and, with one exception, they were not too satisfactory.

R. F. Feind, Allis-Chalmers Manufacturing Co., spoke of using No. 600 lubricants on gyratories and he said that filtering and cooling systems for

crushers were a great improvement.

One producer asked how much grease should be put back in a roller or ball bearing, once the bearing was cleaned preparatory to regreasing. The speaker thought that 35 percent of the volume (by guess) was about right and warned against the use of too much lubricant in such cases. He felt, in some cases, that lubrication fittings could be removed from the bearings so as to help prevent over-lubrication.

E. E. Hamman, Caterpillar Tractor Co., mentioned the desirable use of Triplex oil filters on large engines.

Belt Conveyors

The second scheduled speaker was Melvin C. Dow, chief engineer, New York Trap Rock Corp., who spoke on the "Use and Abuse of Conveyor Belts."

The speaker said that because of the foolproof characteristics of belt conveyors they are often abused and, by giving them a little attention, they will last longer. Belts five years ago cost in the 20c per pound range, but now cost many times that figure and he stated that, under these conditions, a belt that cost $5000 five years ago, now costs $12,000 to $15,000. The speaker confined his remarks to ordinary conveyor belt practices and excluded the so-called "long belt" applications.

Mr. Dow said that design was important and that the point of loading should receive most of the attention. The loading, he said, should be at a uniform rate and in the direction of travel, and the feed should be at the same speed as the belt. The feed should also be placed on the belt with a minimum of turbulence and without spill. The speaker said to note if the loading lip was as close to the belt as possible and he said that the immediate point of impact should not be directly over a metal carrier roll. Rubber covered, or pneumatic carrier rolls, at the loading point were an improvement and to be used when possible.

The width of the feeder should be ⅝ or ¾ the width of the conveyor belt. The feeder should discharge within spill-boards that are flared outward (and in direction of travel) and not parallel to the center line of belt.

Do not load a belt conveyor crossways, the speaker said, and if this practice were necessary, he suggested use of a deflector. Skirt boards, he said, were often a necessary evil and are to be only used as a last resort. Mr. Dow considered each loading point as a separate problem and said that through study as such an increase of 25 to 100 percent in the belt's life was possible.

He said few belts wore out completely and that "edge wear" was usually the first symptom of short life. Edge wear could be traced to sticky idlers and misalignment and related causes. Moisture in the carcass of the belt can do more damage than the stone itself and he mentioned belts 12 to 14 years old that had good edges and cover.

Ripping of belts, the jamming of stone at the discharge ends of belts, and the effects of stone on the return side of belts were all discussed by Mr. Dow. A plow at the tail pulley should be installed so as to remove any stone from the underside, he pointed out, and he said that a new belt must be broken in carefully. Most accidents to belts occur when the belt is empty, and belts should not be overloaded.

Ted Cooke, Lynn Sand & Stone Co., Swampscott, Mass., in the discussions that followed Mr. Dow's paper, told of the use of ½- x 6-in. soft rubber skirt boards.

Bruce S. Campbell, Harry T. Campbell Sons' Corp., Towson, Md., asked about the uniformity of the feed to and from the primary crusher. Mr. Dow said that his company used no feeders ahead of the primary unit nor any immediately following it. Mention was made of the use of pneumatic wheels to push materials back onto a belt.

From the floor the question was asked regarding use of brushes on belts and the speaker said he had tried rotary brushes but that they soon filled up.

G. D. Lott, Jr., Palmetto Quarries Co., Columbia, S. C., asked about the merits of splicing vs. vulcanizing belts and Mr. Dow said that vulcanizing was the best practice. He recommended it for all important belts, but said that metal splicing was easier. He said that belts which operate under high tension may require an extra ply if metal splices are used and that vulcanized joints are easier to keep clean.

Dexter Bullard and F. J. Buffington of New York Trap Corp., Newburgh, N. Y.

The speaker said that in cutting a belt it was best to cut it at right angles to the center line of the belt and not the edges. Mr. Lott said that he tried a 45-deg. splice so as to get more clamps on the splice. Mr. Dow pointed out that the practice, with a 48-in. belt, would waste 4 ft. of belting, which at $15 per foot was a considerable factor, to which Mr. Lott agreed.

Maintenance of Cables

The remainder of this session was devoted to a round table discussion covering nine subjects from the standpoint of preventive maintenance. The first of these concerned wire rope.

Dexter Bullard, New York Trap Rock Corp., told of earlier practices whereby his company purchased boom hoist cables on a hit or miss basis from five or six wire rope manufacturers. As a result, it was difficult to get performance records. Later one rope manufacturer was selected and, after a two year study, the practice of arbitrarily removing the boom cable after 900 hours of service was adopted. It was estimated that at that time the cable had 10 to 15 percent of its life, but dollar-wise the scheme was the most economical. The speaker was asked if he meant "dipper cables" instead of "boom cables" and the reply was, "yes." Mr. Bullard said that this cable was lubricated.

Electrical Equipment

The second subject related to electrical equipment and L. F. Miller, New York Trap Rock Corp., Newburgh, N. Y., was requested to relate practices that he follows. Mr. Miller's impromptu discussion proved so interesting and provoked so much comment that his remarks are printed in full as follows:

"In our various plants we have some 25,000 to 30,000 horsepower of electric motors, and we believe that it is strictly due to a very well worked-out plan of maintenance that we keep our delays down to a minimum. We do not claim that we do not occasionally have a motor blow out or a failure of its companion starting equipment. We do make an attempt to reduce it to the very minimum and, in order to do that, we have found that periodic inspections of this equipment, not only of the motor itself but of its starting equipment as well, does more than anything else to prevent serious breakdowns during the operating season.

"I might say that at this time, while our plants are all down, throughout the electric departments the motors are being taken apart for cleaning. The men not only are thoroughly cleaning them by blowing and digging the dirt out but, after they are cleaned, we put heaters in them in most cases and let the motors come up as warm as we can get them in sub-zero temperature. After that, they are sprayed with a good air-drying var-

nish. After we have sprayed them, and in the larger sizes only (I mean by that 50 hp. and over), we cover them over with either canvas or tar paper. This year we were fortunate in getting a plastic covering which we can wrap very tightly around them.

"We put space heaters in them, and let them lie in there. The temperature will be maintained at anywhere from 90 to 130 deg. F., regardless of the outside temperature. In that way, we prevent the sweating which is one of the most serious hazards to a motor during a shut-down period.

"We also do the same thing, incidentally, during the operating season, over the week-end or some other appropriate time, if we have very high humidity.

"The starting equipment is also taken apart and carefully examined and any worn parts either replaced or cleaned up in such a manner that we feel they are safe to go for quite a while.

"During the operating season, we go on a 60-day operating basis for electric motors and oil-bearing motors. That varies. It might be anything from 14 operating days to two months for an oil-bearing motor, but dust conditions govern that. We have found, on our anti-friction bearings, that about 60 operating days are as long as we feel it is safe to run them without adding new grease.

"How that grease is added is very important. We remove the bottom plug and pump new grease in the top hole of the bearing cap enclosure until we get fresh grease out of the bottom. Then we dig out as much of the grease as we possibly can so that we don't have too much grease in there, because we have found it is just as bad to have too much grease, and possibly worse, than not enough in the bearing because either one will cause it to run hot.

"The general schedule for our starting equipment is to let it operate a full season unless there is some indication of heating or something else wrong. We have gone into a program on our starting equipment. We try to get it in as clear a location as possible, away from the dust, because the care of the sensitive overload control devices which must be set rather high in crusher equipment to cut them out when we do get a piece of steel or something else in the crusher, is a very difficult problem with any of us who are familiar with electric equipment that is used in crushers. You have to set your overloads high enough to pull through the peaks which they hit and, at the same time when you get trouble in there, the overload must act. For that reason, we have incorporated in our starting equipment something that we believe is very, very important. We have a regular set of time limits on overload relays which will operate in most cases about 10 seconds at 125 percent full-load capacity. If, for some reason, we have a prolonged overload, the overload relays will take them out. In addition to that, we have one instantaneous trip relay which will act instantly in case a piece of steel goes into the crusher, or anything—maybe a pinion or tooth gets caught in there—which will cause a tremendous overload. We set them at 400 percent load so that the motor will go out instantaneously when the heavy overload is imposed.

"Another thing that we have found important is the storage of our spare equipment. For a great number of years we, like most everybody else, put out motors and starters around any place we could put them; eventually a breakdown would come and we would need a spare motor. We would get this motor and put it in service. We would put it in its proper location and, as soon as the power was applied, it would blow out because the motor had been stored in a damp

(Continued on page 118)

Manufacturers Division Meeting

MANUFACTURERS DIVISION, N.C.S.A., held its annual business meeting at a luncheon under the chairmanship of J. Craig McLanahan, McLanahan & Stone Corp., Hollidaysburg, Penn. Following official greetings by J. Reid Callanan, president of N.C.S.A., and the roll call, Mr. McLanahan presented his report, which was concerned principally with the conduct of future exhibits.

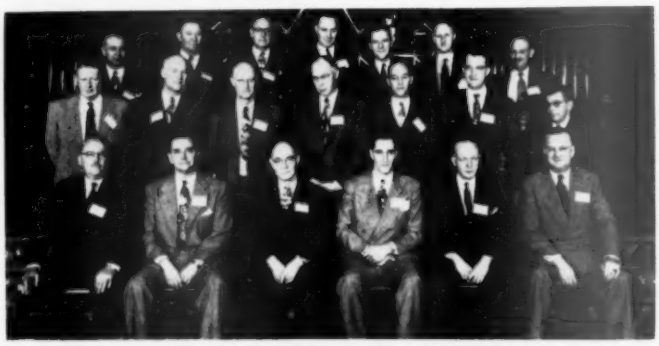
His report, for the consideration of the board of directors of N.C.S.A., suggested ideas to improve attendance at future exhibits. It was suggested that more time be set aside for attendance at exhibits, that the registration desk be on the same floor as the exhibit space, that exhibits be closed during the evenings and that tighter policing through badge identification be practiced. Sentiment apparently was opposed to conduct of a combined outside show in the future, whereby exhibits would be on display for the crushed stone, sand and gravel and ready-mixed concrete industries in one exposition.

Mr. McLanahan expressed his appreciation for the efforts of W. W. King, W. S. Tyler Co., Cleveland, Ohio, in increasing the membership of the Division and thanked J. R. Boyd, secretary of the Division, and past-chairman Cottrell Farrell, Easton Car and Construction Co., Easton, Penn., for their cooperation during the past year.

Mr. King, chairman of the membership committee, reported that eight new members were added in 1950 to bring the total to 97. His ambitious goal of 100 members would have been attained but for the fact that there were a number of mergers this past year.

D. McM. Blackburn, chairman, read resolutions of thanks for the activities of J. Reid Callanan, J. R. Boyd and J. Craig McLanahan during the past year in conduct of the affairs of the Division. A resolution was also read expressing sympathy in the death of past-chairman C. B. Andrews, with copies of the resolution to be sent Mrs. Andrews and the Taylor-Wharton Iron & Steel Co.

Mr. McLanahan was re-elected chairman of the Division and J. R. Boyd was re-elected secretary. Irwin F. Deister, Deister Machine Co., Fort Wayne, Ind., and B. R. Maloney, E.



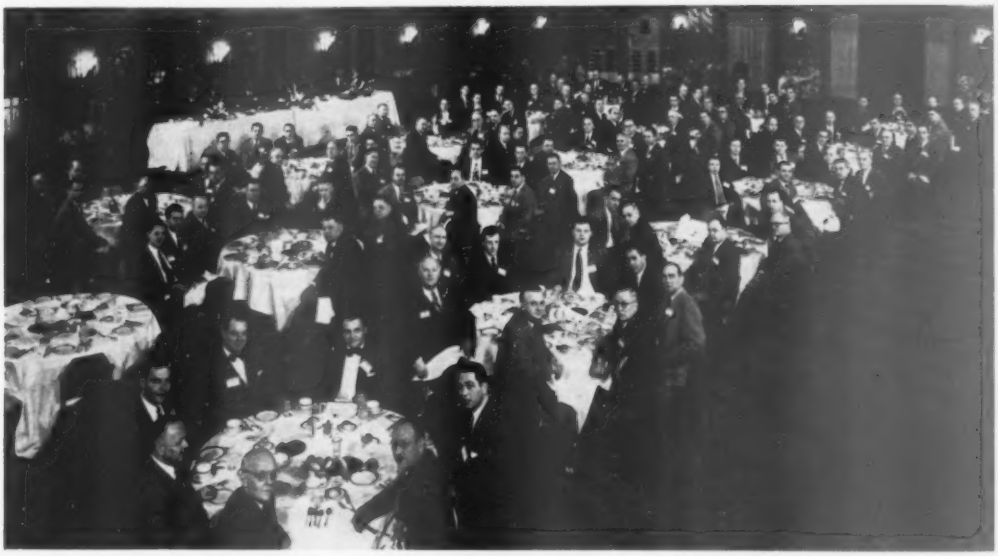
Officers and directors of Manufacturers Division present. Front row, left to right: W. W. King, Irwin F. Deister, J. R. Boyd (secretary), J. Craig McLanahan (chairman), Cottrell Farrell, B. R. Maloney. Second row: D. McM. Blackburn, E. M. Heuston, L. C. Mosley, G. C. Holton, R. D. Ketner, L. A. Eiben, E. J. Goes. Third row: L. A. Rhodes, Milo A. Nice, H. W. Newton, J. B. Terbell, A. E. Conover, W. A. Rundquist and R. M. Murdock

I. duPont de Nemours & Co., New York, N. Y., were re-elected vice-chairmen and W. W. King, W. S. Tyler Co., was elected the third vice-chairman. The executive committee comprises J. Craig McLanahan, Irwin F. Deister, Cottrell Farrell, R. C. Johnson (Simplicity Engineering Co., Durand, Mich.), B. R. Maloney, and J. Reid Callanan, representing N.C.S.A.

The board of directors consists of the following: J. Craig McLanahan, chairman; D. McM. Blackburn, Hendrick Manufacturing Co., Carbondale, Penn.; W. E. Collins, Jr., Atlas Powder Co., Wilmington, Del., A. E. Conover, Hewitt-Robins, Inc., New York, N. Y.; Irwin F. Deister; C. R. Dodge, Northwest Engineering Co., Chicago, Ill.; L. A. Eiben, Northern Blower Co., Cleveland, Ohio; R. F. Feind, Allis-Chalmers Manufacturing Co., Milwaukee, Wis.; E. J. Goes, Koehring Co., Milwaukee, Wis.; E. M. Heuston, Bucyrus-Erie Co., South Milwaukee, Wis.; G. G. Holton, American Cyanamid Co., New York, N. Y.; P. H. Hunter, Harnischfeger Corp., Milwaukee, Wis.; R. C. Johnson, Simplicity Engineering Co., Durand, Mich.; G. H. Keppel, C. G. Buchanan Crushing Machinery Div., Birdsboro Steel Foundry and Machine Co., Birdsboro, Penn.; R. D. Ketner, General Electric Co., Schenectady, N. Y.; W. W. King, W. S. Tyler Co., Cleveland, Ohio; Kenneth Lindsay, Iowa Manufacturing Co., Cedar Rapids, Iowa; B. R. Maloney, E. I. duPont de Nemours Co., New York, N. Y.; M. L. McCormack, Ingersoll-Rand Co., New York, N. Y.; L. C. Mosley, Marion Power Shovel Co., Marion, Ohio; R. M. Murdock, Frog, Switch & Manufacturing Co., New York, N. Y.; H. W. Newton, Barber-Greene Co., Aurora, Ill.; Milo A. Nice, Hercules Powder Co., Wilmington, Del.; F. O. Reedy, Kennedy-Van Saun Manufacturing & Engineering Corp., New York, N. Y.; L. A. Rhodes, Jeffrey Manufacturing Co., Columbus, Ohio; W. A. Rundquist, Pioneer Engineering Works, Inc., Minneapolis, Minn.; J. B. Terbell, American Manganese Steel Division, American Brake Shoe Co., New York, N. Y.; J. A. Trainor, Taylor-Wharton Iron & Steel Co., High Bridge, N. J.

Manufacturers Division paid tribute to past chairmen. Past chairmen present were, left to right: M. S. Lambert, M. B. Garber, Roy Wills, Cottrell Farrell, J. B. Terbell, Abe Goldberg, Milo A. Nice and J. Harper Fulkerson

The meeting concluded with presentation of a wrist watch by the Division to J. R. Boyd, secretary, and administrative director of N.C.S.A., and with a tribute paid to the past chairmen of the Division. M. B. Garber, chairman in 1926, presided over the ceremony. Mr. Garber presented gavels to each past chairman present and told some interesting anecdotes and humorous incidents in connection with various of the presentations. Past chairmen present included Mr. Garber, Abe Goldberg, M. S. Lambert, Roy Wills, J. Harper Fulkerson, Milo A. Nice, J. B. Terbell and Cottrell Farrell.



Business luncheon of Manufacturers Division drew a heavy attendance

A full-sized sign which Agricultural Limestone Institute developed for members' advertising purposes was displayed in the convention hall

Spreading practices, service, merchandising, conservation practices and production problems highlight well-rounded program of A.L.I.

AGSTONE PRODUCERS CONSIDER WAYS TO IMPROVE BUSINESS

SIXTH ANNUAL CONVENTION of the Agricultural Limestone Institute, a division of the National Crushed Stone Association, was held February 7-9 at the Netherland Plaza Hotel, Cincinnati, Ohio, in conjunction with the 34th annual convention of the National Crushed Stone Association.

The opening day, February 7, had two joint sessions for the consideration of subjects of interest to both groups and included a joint luncheon and the annual banquet. Then followed two days of convention sessions of specific interest to agricultural limestone producers, February 5 and 6 having been set aside for N.C.S.A. sessions.

This year's program was one of the best to date, covering a variety of subjects timely to the industry. Principal among them were talks on the government procedure for furnishing liming materials during 1941; the importance of lime in agriculture; soil testing; farm management; and an extremely interesting symposium on limestone spreading. A highlight of the convention was the session for operating men and equipment manufacturers and one on labor relations, held jointly with the N.C.S.A. Proceedings for these joint sessions are considered in the report of the National Crushed Stone Association which is also published in this issue.

An important development announced was appointment of a committee of five men to meet with a similar appointed committee of the National Agricultural Limestone Association this month to consider whether or not there is possibility of a merger of the two associations.

Officers

P. E. Heim, Carbon Limestone Co., Lowelville, Ohio, was re-elected president of the Agricultural Limestone Institute. Henry A. Huschke and J. R. Boyd were re-elected managing director and secretary-treasurer, respectively.

Regional vice-presidents are H. D. Brigstocke, Thomasville Stone and Lime Co., Thomasville, Penn. (*Northeast Region*); Verne C. Morgan, Kentucky Stone Co., Inc., Louisville, Ky. (*East Central*); W. E. Hewitt, East St. Louis Stone Co., East St. Louis, Ill. (*North Central*); C. M. Sims, Campbell Limestone Co., Gaffney, S. C. (*Southern*); and John J. Stark, Girard, Kan. (*Western*).

The board of directors elected was as follows: (*Northeast Region*) Harry E. Battin, Jr., Callanan Road Improvement Co., South Bethlehem, N. Y.; Otho M. Graves, General Crushed Stone Co., Easton, Penn. (*East Central Region*) W. F. Childs, III, Harry T. Campbell Sons' Corp., Towson, Md.; R. D. Davis, Sparta Lime Co., Sparta, Tenn.; S. B. Downing, Jr., Central Rock Co., Lexington, Ky.; A. W. McThenia, Acme Limestone Co., Fort Spring, W. Va.; John R. Rice, Liberty Limestone Corp., Buchanan, Va; F. G. White, M. J. Grove Lime Co., Stephens City, Va. (*North Central Region*) W. L. Bryan, Bryan Construction Co., Northfield, Minn.; H. A. Clark, Consumers Co., Chicago, Ill.; Charles Coburn, Waukesha Lime and Stone Co., Inc., Waukesha, Wis.; W. A. Corson, Inland Lime and Stone Co., Manistique, Mich.; L. R. Falk, L. R. Falk Construction Co., St. Ansgar, Iowa; J. L. Fay, Material Service Corp., LaPorte, Ind.; Maurice Greenberg, Lincoln Crushed Stone Co., Joliet, Ill.; A. K. Hausmann, The Kelley Lime and Transport Co., Cleveland, Ohio; K. K. Kinsey, Concrete Materials and Construction Co., Cedar Rapids, Iowa; H. C. Krause, Columbia Quarry Co., St. Louis, Mo.; W. H. Margraf, Marble Cliff Quarries Co., Columbus, Ohio; R. E. Meshberger, Meshberger Stone Co., Inc., Columbus, Ind.; Paul B. Nauman, Dubuque Stone Products Co., Dubuque, Iowa; J. E. Ott, Wallace Stone Co., Bay Port, Mich.; W. J. Stoffel, Dolese and Shepard Co., Chicago, Ill.; W. E. Stone, Piqua Stone Products Co., Piqua, Ohio. (*Southern Region*) V. Scott, Southwest Stone Co., Dallas, Texas. (*Western Region*) John H. Riddle, Riddle Quarries, Inc., Marion, Kan.; and D. P. Thomas, Fort Scott Hydraulic Cement Co., Fort Scott, Kan. (*Canada*) D. H. Henderson, Canada Crushed Stone, Ltd., Hamilton, Ontario, Can.

The president and regional vice-presidents complete the board of directors with Russell Rarey, representing the National Crushed Stone Association on the board of directors of A.L.I.

Presiding Officers

P. E. Heim, president, presided over the joint luncheon of the two associations and also the opening session of

A.L.I.; K. K. Kinsey for a session considering procurement practices for conservation materials and the symposium on spreading agricultural limestone; John R. Rice for the session devoted largely to farming practices. W. H. Margraf presided over a luncheon meeting, and the joint sessions, for both sessions, were presided over by G. D. Lott, Jr. (operating session) and Wilson P. Foss III, (employe relations). The convention concluded with a business meeting under the chairmanship of Mr. Heim.

Following presentation of a colored film, "Treasure Islands," furnished through courtesy of the Hawaiian Pineapple Co., Mr. Heim called the convention to order. Following a few remarks on the basis for assessment of dues, Mr. Heim urged that each member function as a one-man membership committee in an all-out effort to increase membership. He reviewed briefly some of the obstacles to operations in 1950 which included spotty and unfavorable weather conditions, and car shortages. The great need for sales promotion was stressed and the various active state associations were commended for the excellent jobs they are doing.

Managing Director's Report

Managing director Henry A. Huschke, in his annual report, touched upon all the principal activities of his office. Of most concern at present is the outlook for ACP appropriations in view of the federal government's expressed program to reduce all nonmilitary expenses. At present there is a $285,000,000 program authorized for the 1951 program, which is the figure requested by the president in his budget message to Congress on January 15. Mr. Huschke believes, in view of the need for increased food production to support the military effort, that the conservation program need not suffer.

Percentage depletion was covered by Mr. Huschke who detailed the sequence of events that finally led up to denial of benefits for the industry because of the Korean emergency after a percentage depletion allowance had actually been granted. His office will continue its efforts to encourage passage of legislation to amend the Soil Conservation and Domestic Allotment Act with respect to purchase orders in order that recognition can be given, by price, for materials on the basis of quality.

Mr. Huschke was enthusiastic about the progress that is being made in the promotional program. Posters were on display in the convention meeting room to show the progress to date. It was pointed out that many thousands of copies of promotional materials have been purchased for use. Over 1,000,000 copies of four folders and two invisible ink postcards were purchased mainly for distribution to farmers. The manual

Russell Rarey, Marble Cliff Quarries Co., Columbus, Ohio; R. R. Medley, American Limestone Co., Knoxville, Tenn.; W. B. Meunt, Maymead Lime Co., Shouns, Tenn., and A. J. Hood of the same firm

"About Agricultural Limestone" and newspaper advertising mats on soil liming also have been purchased in good quantities as has the film "The Other Side of the Fence."

Three new items for promotional use were added during 1950, including radio spot announcements, booth displays and outdoor billboard posters.

Mr. Huschke reviewed his miscellaneous activities which included attendance at some 14 meetings in 1950 and participation in a fertilizer technology short course. Membership has held fairly stable and now totals 282, including 160 active full members. In conclusion, he pledged his utmost efforts in behalf of the association in view of new demands because of the war which will require vigilance and a greatly increased work load.

Washington Developments

J. R. Boyd, secretary-treasurer, in his annual report, briefly touched upon developments in Washington that he had earlier covered in his report to the N.C.S.A. Among them were the opposition to be made against the railroads in their efforts to secure a 6 percent general rate increase, the impending wage rate determination to be made under the Walsh-Healey Act, and progress in the accident prevention program.

As far as materials allocations and priorities are concerned, he assured the members that the industry will be given consideration, as essential to the war effort, in the development of a controlled materials plan which should be in effect by summer.

Role of Liming

Dr. Firman E. Bear, chairman, Soils Department, Rutgers University, New Brunswick, N. J., presented a paper, "Soils, Plants, Animals, and Men Need Lime," which had much information to substantiate that the application of liming materials is the first requisite of a productive soil.

In touching upon extent of use, he said that 95 percent of the total tonnage of liming materials used was agricultural limestone, and he then considered methods for determining when liming materials should be applied, including the "intensity factor" as measured by a pH meter and the "capacity factor" by a method which takes into account the clay and organic-matter content of the soil. Whereas 500 lb. of limestone may be sufficient to raise the pH value of a particular sandy soil from 5 to 6, he said that results of both measurements might indicate a requirement much greater for soils of different character. In commenting on fineness, he recommended fine pulverization particularly for dolomitic limestones.

As to the pH value desired in humid regions, he cited experiments which indicate a top of 6.5; otherwise the solubilities of certain minor elements may be greatly reduced. Molybdenum, which is essential to nitrogen fixation, becomes more available with rise in pH values, which he pointed to as an important reason for liming.

Dr. Bear then discussed the desired ratios of hydrogen, calcium, magnesium and potassium and the relationships of each in making the others available to the soil. Excesses of potassium, particularly, he said are to be avoided and he showed that for greatest economy, the soil should be fed as much calcium as possible. Otherwise, plants will extract excessive amounts of potassium from the soil. He said that the plow depth of a soil not only should be maintained at a pH value between 6.0 and 6.5 but also a considerable depth of subsoil.

He concluded with a criticism of the agricultural limestone industry's efforts to sell its product as compared to the fertilizer industry and urged that substantial funds be set aside for sales promotion that will be educational in character.

Luncheon of Agricultural Limestone Institute. Principal speakers and honored guests at head table

A noon luncheon was held on February 8 and was well attended. W. H. Margraf, Agricultural Limestone Division, Marble Cliff Quarries Co., Columbus, Ohio, presided.

The speaker was Major Norman A. Imrie, Columbus, Ohio, who chose as his theme, "Uncle Sam and the Prodigal Son." Major Imrie said the present struggles between nations and social ideals stemmed from the pressure of survival of peoples of the earth. Starvation and hunger amid the massed millions, especially in Asia, are at the root of world wide unrest and that the United States was approaching similar conditions because of our prodigal waste of national assets. He listed the most important assets we are wasting as water resources, trees and vegetation, soil and wild life.

The wasteful handling of our forests has resulted in soil erosion and escape of water which, if continued, would place our nation in a condition paralleling those of the starvation areas. He included as wild life, soil bacterial organisms which are essential for agricultural growth.

Conservation Procedure

The February 8 afternoon session was under the chairmanship of K. K. Kinsey, Concrete Materials and Construction Co., Cedar Rapids, Iowa. The first speaker was Roland Crumpter, chief, Conservation Materials and Service Section, Production and Marketing Administration, Washington, D. C., who spoke on "Procedure for Furnishing Conservation Materials for 1951."

Mr. Crumpler said that the Production and Marketing Administration has recently written an elaborate procedure covering all phases of its program of furnishing materials and services to farmers under the Agricultural Conservation Program. This procedure is available for public dissemination, and Mr. Crumpler suggested that members of the Institute interested in the procedure contact managing director Henry Huschke, who will supply copies.

This procedure, the speaker emphasized, although written in Washington, is to be applied in the individual state and county offices. It is up to these offices, he said, to apply it and interpret it, and when an individual has a question concerning his operations, if he is working with state and county offices in the furnishing of liming materials, he is urged to take the matter up with these offices or the Section's field organization or, failing in satisfaction with these sources, may contact the offices of the Section in Washington.

When the conservation program was inaugurated in 1936, Mr. Crumpler declared, it was a sort of stop-gap between the old A.A.A. acreage allotment programs and the more permanent conservation program. The government started off in the field of conservation work with absolute grants to farmers for things that they did. The Conservation Materials and Services Section got under way in 1936 in furnishing farmers concentrated superphosphate, made by the Tennessee Valley Authority at Muscle Shoals, Ala. The government paid all of the cost, and delivered it to sidings for farmers. The farmer had no interest in the material in a financial way except the cost involved in getting it from the station to his farm and on his land.

It was soon realized that the government could not finance anything like a complete program in all its aspects of conservation practice, and so as the program grew and expanded, the farmer was called on to make a contribution to the off-the-farm cost of things that the Section helped him get on his land for conservation. The farmer was furnished with limestone, seed, terracing service, and ditch-digging services. Gradually, the share the farmer paid for these materials and services was increased to the point where he is now paying roughly 50 percent of the off-the-farm cost of the materials and services. He therefore has a great interest in what he is buying since he now puts up a substantial part of the cash, and he wants value for his money.

In the furnishing of these materials and services the Section entered into competitive contracts with various suppliers of fertilizers, lime, seed, etc., and for a long time the contract plan was the only method of furnishing the farmer with the materials and services he wanted. When this contracting grew to a point where it involved 20,000,000 tons of lime, 2,000,000 tons of fertilizer and 50,000,000 lb. of seed annually, the Section decentralized and relegated a lot of contracting to the states. Various state offices then grew to a point where they contracted for a lot of these things, but there was always missing a vital link in distribution when the contract system was in effect. The Section bought solely from primary supplies, manufacturers, and big distributors. The dealer in the small town or cross-roads store had no part in this transaction, and most of the vast distributive channels of fertilizers were by-passed.

In about 1940, the Section devised a plan called the Purchase Order Plan and legislation for it was obtained. This is a plan whereby the farmer entitled to aid in a conservation program is given an order in his local county office, to a dealer in that same locality, for the material or service that he is entitled to. He then takes it to the dealer, puts up his

share of the cost, the dealer turns the order into the state or county office and the dealer gets the rest of his money.

The adoption of this plan, Crumpler said, has given rise to problems with the result that the Section has deemed it necessary to seek legislation to modify the fair price regulations of the plan. A fair price, under the law as it now stands, is the best price which is the competitive price at which a dealer or dealers in a given area can furnish material. Thus, it is the lowest competitive price. This price in essence is little different from the price obtained through competitive bidding under the old contract system. It limits competition to some extent, however, and certainly limits the price.

Recommended legislation was introduced in the last session of Congress to modernize the Purchase Order Plan by eliminating the requirement for setting fair prices, and in its place the government would determine what it would pay on a given purchase order for a given quantity of material. The farmer would then take the order to any dealer of his choice and pay whatever else is necessary to obtain the material. This proposed legislation passed the Senate but failed in the House of Representatives. Crumpler said he believed that opposition to the proposal was largely the result of lack of understanding of what it proposed to do and a misconception that nobody wanted it among the farm group. The House Committee, he said, seemed to believe that only the limestone producers were interested in the proposal, but this is a narrow and incorrect viewpoint, since farmers, state committeemen, seed distributors, and fertilizer men are in favor of it.

The bill has been reintroduced in the present Congress by a member of the House Committee on Agriculture from Ohio. At the same time the Section began a canvass to find out its chances of passage with the result that it appears now to have a much better chance.

In a typical operation under the present law, a fair price is established in a given county with the county committee having several alternatives as to how it shall aid the farmer in getting for him liming material under the program. It can allow the farmer to go out and buy the material wherever he will, for cash, and at the end of the year come into the county office and get his payment for the share the government agreed to put up. If the county committee—or the state committee—so desires, it may obtain competitive contracts, limit the business to the successful contractor for a county. In that situation, the orders are placed in the county office, the farmer puts up his share of the cost to the county office generally, the county and state placing orders with the supplier who delivers the material to the farm specified. If they select the purchase order plan, the first step in the operations is to solicit quotations from all of the dealers in the area. The county committee is supposed to examine these offers and select from among them the offer of the dealer who will guarantee to furnish standard quality material at the lowest price, and select that price as the maximum fair price.

At this point all dealers who quoted that price or a lower price are eligible to receive purchase orders. The county committee notifies all other suppliers in the county that they are ineligible, but may become eligible by agreeing to furnish the material in question at the established price. The names of eligible dealers are posted on a board in the county office for inspection by the farmers. When the farmer has selected the dealer of his choice who will fill his order, he takes his purchase order to that dealer. The dealer delivers the material to his farm in accordance with specifications, gets a receipt and collects from the farmer that amount which is the difference between the government's share of the cost and the fair price, turns in this completed purchase order to the county office, and gets the balance of his money.

The effect of this procedure, Crumpler indicated, is to limit the competition for the business under the Agricultural Conservation Program to those dealers who will meet this one price. Here there is very little consideration given to different degrees of quality, fineness, carbonate content, and type and value of service.

These weaknesses in the present plan are those the Section seeks to correct and eliminate in the new plan which will do away with the necessity for setting a fair price, and thus throwing the business open to competition in the community, letting quality and grade of service be a factor in determining who shall get the business.

Following Mr. Crumpler's speech, there was a discussion period in the form of questions and answers. In response to questions, the speaker reviewed the reasons why, in his opinion, the proposal for change was defeated in the last Congress. He said that the Section had too little time to prepare logical briefs for the change in the fair price law.

Asked if, when the county committee had set a fair price, this price could be set aside or changed by the state committee, the speaker declared that the state committee had such power under the law. The meeting was concluded with Mr. Crumpler clearing up several other points in procedure on the part of local boards.

Spreading

A second feature of this session was a symposium on transportation and

Dr. Firman E. Bear, chairman, Soils Dep't, Agricultural Experiment Station, Rutgers University, New Brunswick, N. J., convention guest speaker

L. R. Falk, L. R. Falk Construction Co., St. Ansgar, Iowa; and W. D. Dillon, Dillon, Sharpe & Co., Columbus Junction, Iowa

Mrs. Phillip E. Heim, Carbon Limestone Co., Lowellville, Ohio, and Mrs. W. H. Margraf, Marble Cliff Quarries Co., Columbus, Ohio

spreading of agricultural limestone. The first subject was, "Shall Producers Own and Operate Spreader Trucks?" John H. Riddle, Riddle Quarries, Inc., Marion, Kan., took the affirmative stand, and P. E. Heim, Carbon Limestone Co., Lowellville, Ohio, took the negative approach.

Mr. Riddle said that his operation was in central Kansas and that he served 18 counties that represented a triangle roughly 10,000 sq. miles in area and, as he was pioneering the agstone industry in his territory, the material had to be aggressively sold since many of the farmers rented their farms and only the most progressive used agricultural limestone. He said two tons per acre per 10 or 12 years was nearly average of what to expect. Mr. Riddle has 14 company-owned spreader trucks and has eight more under contract. He felt that his set-up with company-owned trucks enabled greater economy, for he had direct control of distribution and in the selection of destinations. He said his trucks also spread phosphate materials.

Mr. Heim said 65 spreader trucks operated from his plant and that his limestone was 100 percent minus 10-mesh, 90 percent minus 20-mesh, and 50 percent minus 100-mesh.

With so many trucks needed, Mr. Heim felt that truck maintenance was better under truck driver ownership, pointing out that small privately owned truck owners helped each other and were cooperative, citing instances where a truck was stuck in the mud, or had broken through a bridge, and other spreader truck owners had come to the rescue without charge. The speaker said that if his company had owned either truck they would have been presented with a sizable towing bill.

Mr. Heim called attention to the large investment his company would have if all spreader trucks were company-owned and of the excess labor he would have on his hands during off-season periods. On the other hand, said Mr. Heim, privately owned trucks could haul coal and other commodities during winter months. All in all, he felt that privately owned trucks were doing a good job for him.

W. B. Mount, Maymead Lime Co., Shouns, Tenn., said his company owned the spreader bodies but the trucks were privately owned. He said he was handling 400 tons per day.

Orran Hofstetter, Orrville, Ohio, spoke on "Spreading Limestone Evenly and in the Desired Amounts." He said his company was a sales agency only and that it spread about 100,000 tons per year. The speaker felt that the less one "fools around with A.A.A." the better and that producers should try "selling" agstone themselves. He said that he found the 10-ton trucks with 10-in. tires to be the best for his work and that he used the fan-type spreaders. Mr. Hofstetter said he spread fertilizer as well as agstone and the former was sometimes gummy so he spread agstone one day and the fertilizer the next. Another speaker from the floor quoted an article from ROCK PRODUCTS relating to the use of spreading rock phosphate and agstone, and of the possible reaction between agstone and super phosphates.

Board of directors meeting of Agricultural Limestone Institute

Publications distributed by A.L.I. were on display

F. W. Mumma, Columbia Quarry Co., St. Louis, Mo., chose as his theme, "Can Limestone Be Stockpiled Close to Point of Use Economically?" The speaker felt that dealers' stockpiling was very desirable because many spreaders have to maintain a crew all the year around and with a supply of agstone close at hand there would be many half-days when spreading would be possible. Mr. Mumma also thought a conspicuous stockpile of agstone was a good advertisement. He called attention to the fact that not all car shipments would have to go to the stockpile as some agstone could be delivered direct from the car to the fields.

When asked about the loss of agstone in a stockpile, Mr. Mumma replied, "not very much." However, another speaker said he had 20,000 tons in a stockpile and lost 900 tons the first year.

Still another speaker said he made more money by stockpiling and that losses in the pile were due mainly to scale troubles.

William H. Carroll, Harry T. Campbell Sons' Corp., Towson, Md., said stockpiled material tended to arch in the trucks and that his was a fine-ground agstone. Some thought arching could be prevented by a suitable type of truck body.

One eastern producer said he was paid $5 per ton within a radius of six miles and a Mississippi Valley producer said he received $3.50 per ton.

Robert F. Schwarz, Pontiac Stone Co., Pontiac, Ill., said that the problem of delivering limestone when farmers want it was strictly a delivery problem and he urged early placement of orders. Because of war conditions the speaker urged the use of stockpiles by dealers.

Two speakers gave their views on how to handle the problem of frozen agstone shipments. The first was William E. Kearn, Consumers Co., Chicago, Ill., who described a simple heater to be used on closed hoppers. It consisted of an oil drum cut in half diagonally to make two heaters. The fuel used was waste crankcase oil which was ignited by putting a little gasoline on top of the oil. Where cars were badly frozen, dynamite often had to be used.

The speaker also told of using a "hot fog" burner that used coal oil as a fuel. This burner was used in conjunction with a special perforated burner tube and the latter was put within a few inches of the hopper's

door. The burner operated at 45 p.s.i. pressure. The use of live steam was briefly mentioned as was the burning of corn cobs as means of thawing frozen car shipments.

The speaker said not to try to unload a car when water started to flow out of the door because the agstone was a fairly good conductor of heat, and if a little material was removed from the throat of the hopper before the mass had thawed there would be nothing available to act as a conductor.

W. E. Dickinson, Calcium Chloride Association, Washington, D. C., illustrated by means of slides the use of calcium chloride as a means of preventing agstone from freezing. The speaker said concentrated solutions of calcium chloride froze at 60 deg. F. below zero and that the solid readily absorbed water from the air and became a liquid. He gave figures and data relating to the use of the chemical in the coal industry where two methods are used. One was to sprinkle flake $CaCl_2$ over the piles, and the second method was to spray the coal with a concentrated solution.

Mr. Dickinson said where the agstone contained a small amount of moisture, two to three pounds of $CaCl_2$ per ton would protect it at temperatures down to around 15 deg. F., but if the stone had around 8 percent moisture in it, 10 to 15 lb. of $CaCl_2$ per ton might be needed to protect to the same temperature range. He said calcium chloride costs two cents per pound.

Mr. Dickinson advanced the idea of spraying the hopper portion of a car with $CaCl_2$ using 10 lb. of the chemical. Next, the top surface of the car is to be sprayed with about 20 lb. so, for a 50-55 ton car, the total cost would be approximately 11 cents per ton. Material could be lumpy due to freezing conditions.

The speaker said that the possibility of damage due to the use of calcium chloride was unknown and called attention to the use of the chemical as a weed killer.

One member from the floor asked if the chemical would last and it was pointed out that $CaCl_2$ could be leached out of a stockpile by rains. Another asked about the rusting of truck bodies due to calcium chloride and it was pointed out that $CaCl_2$ was not corrosive but that it did hold water. If truck bodies were hosed out every night after using agstone treated with calcium chloride, rusting would be practically eliminated.

Farming Practices

The first speaker at the concluding session was P. E. Grubb, plant manager, DeKalb Agricultural Association, Inc., Johnstown, Ohio. Mr. Grubb showed an interesting colored moving picture of his highly mechanized farm and of his work relating to management of the soil. The speaker

P. E. Holm, Carbon Limestone Co., Lowellville, Ohio, president of the Agricultural Limestone Institute, and Louis J. Dushek, Callanan Road Improvement Co., South Bethlehem, N. Y.

showed how he took a farm that had been run down and by drainage and adequate liming and fertilization had built up for high productivity. He showed figures that indicated a net of $15 per acre over and above what production would have been if the soil had not been properly managed. He said there were 6,000,000 farms in the United States with an average of 10 acres each that required drainage to bring the soil to its maximum productivity.

The second speaker was Dr. Jackson B. Hester, soil technologist, Campbell Soup Co., Riverton, N. J., who spoke on "The Place of Lime In Farm Economy." Dr. Hester said that in South Carolina in 1904 more people died of disease and "hidden fears" than so far have died from atomic explosions and he further amplified the statement by saying at that time the state had a population of about 1,500,000. He also said that five times more people die each year from starvation than from the two atomic bomb blasts and that when to this total was added the hungry ones, it presented a very dismal picture. The speaker showed colored slides that pointed out what happened to certain plants due to soil deficiencies. He showed that it was possible to produce 15 to 18 tons of tomatoes per acre if the soil is properly managed.

Dr. Hester was asked about the simultaneous addition of lime and rock phosphates and he said that such a procedure would make the phosphate more quickly available, provided the soil had sufficient legumes in it.

The final speaker of the session was R. Willis Stout, soil editor, *The Kentucky Farmer*, Louisville, Ky., who chose as his theme, "Limestone Agriculture and Grassland Farming." Mr. Stout showed colored slides of his farm which has been in his family for five generations and which is maintained at a high level of agricultural productivity by means of proper crop rotation tied in with adequate fertilization and liming.

Following Mr. Stout, K. K. Kinsey presented the auditor's report and W. F. Childs, III, Harry T. Campbell Sons' Corp., Towson, Md., read the report of the resolutions committee, after which H. C. Krause, chairman of the nominations committee presented his report.

Apportionment of Highway Funds

THE DEPARTMENT OF COMMERCE recently announced the apportionment of $400,000,000 of the $500,000,000 authorized as federal aid to the states for highways in the fiscal year beginning July 1, 1951. The funds were authorized by the Federal-Aid Highway Act which was approved September 7, 1950. The act provides $225,000,000 for projects on the federal-aid highway system, $150,000,000 for projects on the federal-aid secondary system and $125,000,000 for the projects on the federal-aid highway system in urban areas.

A portion of the fund was set aside for administrative and research expenditures. The $400,000,000 apportionment to the states was made by using tentative figures for rural and urban population for each of the states. The remaining amount will be apportioned and proper adjustment made when final urban and rural population figures are reported by the Bureau of the Census.

Canadian Sandstone

A MINE AT Bells Corners, Canada, believed capable of turning out silica sand for the manufacture of high-grade glass, is now being developed by Col. G. Coutre of Quebec City. From information supplied by the Industrial Minerals Division of the Department of Mines and Technical Surveys, a large deposit of high-grade sandstone was discovered through diamond drilling. Sinking of a mine shaft to a depth of 120 ft. to reach the desired sandstone has already been started and construction of a processing plant is expected to be under way this spring.

Most of the deposits previously examined in Canada contained iron, alumina and other impurities that made them unsuitable in their natural state as a source of material for glass manufacture. As a result, Canadian requirements have had to be imported. To encourage industry to develop domestic sources of supply, the Industrial Minerals Division some time ago undertook a study of raw materials, the needs of the industry, competitive costs and related matters. The study also involved research in selecting a process that would remove the objectional impurities.

Compartment Mill Performance

By B. M. PEARSON

IT IS OF considerable practical importance to calculate the throughput balance of multi-compartment cement mills and to ascertain the throughput time of the product and the amount of this. Also, it is of great advantage to understand the individual relations of the compartments. The following gives a detailed and also a simplified method of calculation, by way of a practical example, of the output of a well designed and proportioned mill.

Detailed Calculation

For this purpose, Table I is presented as an example, in which the complete data for the calculation are shown. As regards the detail, the following needs to be said:

1. The calculation of the filling volume is conducted according to the Data Sheet No. 4b, of the journal *Zement*, vol. 31 (1942), May 14, thus with measurement of the outside mill volume Da. A further simplified calculation of the filling volume is taken from *Zement-Kalk-Gips*, vol. 2 (1949), p. 223. Both methods, when correctly applied, give the same result.

2. The weight of the grinding media, which are present in 1 cu. m. of space=G kg./cu. m., and is given by the density k.

$$k = \frac{G}{7850}$$

and gives values of

1st compartment=0.59
2nd compartment=0.59
3rd compartment=0.62

and can also serve as the exact values (see Anselm: "Die Zement-herstellung," Berlin, 1941). The value in the second chamber of 0.59 where both the surfaces (that of the grinding media and that of the product are the same value) show that 59 parts of grinding media are contained in 1 cu. m. of volume, with 41 parts of product.

3. With the example given, the filling volume of the individual compartments is:

1st compartment=0.30
2nd compartment=0.27
3rd compartment=0.24

As the driving motors for mills are now made more powerful than formerly, the present filling volumes giving more economical output will be:

1st compartment=0.35
2nd compartment=0.32
3rd compartment=0.32 with the Concentra design (Krupp-Grusonwerk)

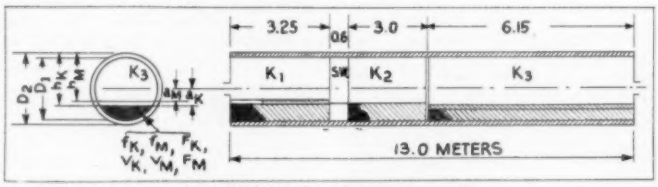
4. The following figures for the weight volume of the balls in kg./cu. m. are sufficiently accurate:

Balls
100—60 mm. Φ=4400 kg./cu. m.
60—40 mm. Φ=4600 kg./cu. m.
30—15 mm. Φ=4800 kg./cu. m.

5. The difference in col. 16 of the table: F=0.99 (1st compartment) to col. 9: V_K=1.02, is governed by the amount of air between the grinding media and the surface of the product being ground, as actually the product being ground is lower. In the 2nd compartment both the surfaces are the same; in the 3rd compartment, the ratio is the reverse of that in the first compartment.

6. In column 17, the calculation with cement is best made with a filling volume of 60 percent=0.60 and Y=3.0, as an average value. This gives a filling density of 1.8 tons/cu. m. which corresponds to a cement in the classified condition.

7. The average resulting throughput velocity through the individual compartments resolves down to (col-



Load distribution for a 3-compartment mill

	THROUGHPUT TIME OF THE MILLED PRODUCT THROUGH A 3-COMPARTMENT COMBINATION MILL 2·2 X 13 METERS; OUTPUT Q= 16 T.P.H. 7.5% R. CEMENT																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	INSIDE LENGTH OF COMPARTMENT	INSIDE DIA. OF COMPARTMENT	SPACING OF SURFACE: BALLS	SPACING OF SURFACE: MILL PRODUCT	SPACING OF SURFACE: BALLS	SPACING OF SURFACE: MILL PRODUCT	FILLING VOLUME OF SURFACE: BALLS	FILLING VOLUME OF SURFACE: PRODUCT	FILLING VOLUMES OF SURFACE: BALLS	FILLING VOLUMES OF SURFACE: PRODUCT	FILLING VOLUMES OF SURFACE: BALLS	GRINDING MEDIA AMOUNT		NET SURFACE =NET VOLUME OF MILL BALLS	NET SURFACE =NET VOLUME OF MILL PRODUCT	NET SURFACE =NET VOLUME ADDITION	MILL PRODUCT AMOUNT M_M		THROUGH VELOCITY OF MILL PRODUCT	THROUGHPUT TIME	INTERNAL MILL VOLUMES: WITHOUT FILLING	INTERNAL MILL VOLUMES: OF BALL FILLING	INTERNAL MILL VOLUMES: OF MILL PRODUCT	DENSITY OF GRINDING MEDIA FILLING
SYMBOL	L	D_i	h_K	h_M	a_K	a_M	f_K	f_M	V_K	V_M	V'_K	M_K		F_K	F_M	F	M_M		W	t	V_R	V_{RK}	V_{RM}	k
UNIT	m.	m.	mm.	mm.	mm.	mm.	% / 100		cu.m/m.		cu.m.	t	%				t	%	m/min.	min.		cu.m.		% / 100
CALCULATION	—	—	—	—	—	—	—	—	—	—	$L \cdot V_K$	—	—	$V_K \cdot k$	$V_M \cdot F_K$	$F_K + F_M$	$F_M \cdot L \cdot Y$	—	Q' / F_M	L / W	$D_i^2 \pi / 4 \cdot L$	$F \cdot L / K$	$F \cdot L / M$	$V_{RK} / V_K \cdot L$
K_1	3.25	2.08	1430	1470	330	370	0.30	0.28	1.02	0.95	3.32	14.3	28.6	0.57	0.42	0.99	1.64	28.5	0.53	6.1	11.0	1.85	1.36	56
K_2	3.50	2.08	1485	1485	385	385	0.27	0.27	0.92	0.92	2.76	12.7	25.4	0.54	0.38	0.92	1.36	23.7	0.585	5.1	10.2	1.62	1.14	59
K_3	6.15	2.08	1560	1540	440	440	0.23	0.24	0.78	0.82	4.80	23.0	46.0	0.48	0.34	0.82	2.50	43.5	0.655	9.4	20.9	2.95	2.09	62
SIEVE WALL	0.60	2.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.25	4.3	—	0.9	1.7	—	0.20	—
TOTAL	13.00	2.08					0.26					50.0	100.0				5.75	100.0	0.61	21.5	43.8	6.42	4.79	59

Table I. Time of travel data for material passing through a 3-compartment mill

umn 19) $w = \frac{Q'}{F_u}$; in which Q′ signifies the output of the mill in cu. m./min.

$$Q' = \frac{Q^{t/h}}{Y \cdot 60} = \frac{16}{1.6 \times 60} =$$

0.222 cu. m/min.

Here it is taken as: Y = 1.2.

The milling capacity of the unit accordingly is 5750 kg.

The product being milled travels accordingly at about 0.6 m./min. through the individual compartments and gives a throughput time of 21.5 min.

B. Simplified calculation.

Inside cross sectional area of the mill cylinder

$$\frac{Di^2 \cdot \pi}{4} = \frac{2.08^2 \cdot \pi}{4} = 3.4 \text{ sq. m.}$$

Filling height of the mill on the average 0.26 = 26 percent

Filling of the mill $R_i = 0.26 \times 3.4 =$ 0.88 sq. m.

Average density of the mill filling mass = 0.59

Average hollow-space volume between the balls = 0.41

Cross sectional area $F_z = 0.88 \times 0.41 =$ 0.36 sq. m.

Amount of milled product with Y = 1.2 = F_z x length in meters x Y = 0.36 x 13 x 1.2 = 5600 kg.

Average throughput velocity in an axial direction:

$$w = \frac{Q}{Y \times 60 \times F_z} = \frac{16}{1.2 \times 60 \times 0.36} =$$

0.617 m./min.

Average throughput time of the milled product through the mill

$$t = \frac{\text{length in meters}}{\text{w in meters/min.}} = \frac{13}{0.617} =$$

21.1 min.

It will be seen thus that there is good agreement between the two methods of calculation.

The foregoing was translated from an article by W. Anselm which appeared in the German publication Zement-Kalk-Gips, *vol. 3, No. 1, pp. 16–17.*

$12,000,000 Cement Plant?

THE POSSIBILITY of a $12,000,000 cement plant at Quebec City, Canada, with an annual capacity of 1,250,000 bbl., is under consideration, according to Armand Viau, Quebec City's industrial commissioner.

The project has been approved without restrictions by the Quebec Board of Trade. The decision to go ahead now rests with European interests that have formed a syndicate to finance the undertaking. The plant, properties and working capital will require about $8,000,000, and the rail and dock facilities, an estimated $3,000,000 to $4,000,000.

Correction

THE ARTICLE "Wet vs. Dry Process" by Dr. Steven Gottlieb, published in the November, 1950, issue of ROCK PRODUCTS contained comparison graphs of heat efficiencies. The heat balance and efficiency figures belonging to the graphs of Table I were inadvertently omitted. They are given below.

On page 90 of the same article the reference to the burning of clinker by convectional heat transfer should have been astericized to relate to the Dwight-Lloyd system, based on patents of F. Wendeborn.

On page 92, paragraph 3 of Dr. Gottlieb's article, the discussion of the new nodulizer should have been referred to his article on "Burning Cement in Shaft Kilns" which appeared in the October, 1950, issue of ROCK PRODUCTS.

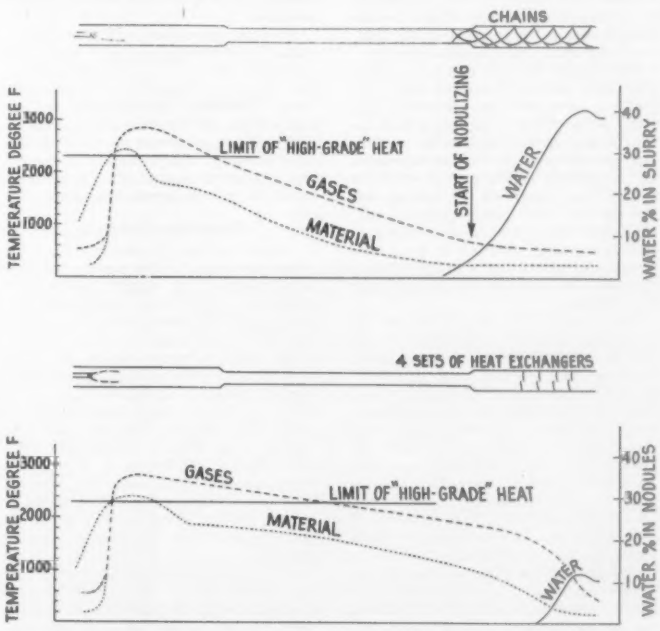
Heat Efficiencies Compared

a) Wet process rotary kiln, 8 ft. x 9 ft. 6 in. x 250 ft., 185 tons of clinker per day at 25 percent of Brit. Stand. coal consumption, $CaCO_3$ = 77.5 percent, water in slurry 38 percent, exit gas temperature 470 deg. F.

b) Semi-dry process rotary kiln, 8 ft. x 9 ft. 6 in. x 250 ft., 240 tons of clinker per day at 16.5 percent of Brit. Standard coal consumption, $CaCO_3$ = 77.5 percent, water in nodules 11 percent, exit gas temperature 470 deg. F.

Percent	a)	B.t.u. per 100 lb. of clinker	b)	Percent
37.6	124100	Heat required for the evaporation of water	36000	16
28	91629	Heat required for the decomposition of carbonates	91629	41
1.7	5540	Heat losses for the CO_2 in the raw material at exit gas temperature	5540	2.5
12.8	42200	Heat loss in combustion gases	27820	12.4
1.–	3200	Heat loss due to excess air, assuming nearly ideal conditions with 12 percent of excess air and no carbon monoxide content	2200	1.–
0.8	2670	Heat loss due to clinker temperature	4282	1.9
0.06	200	Heat loss in dust	200	0.1
18.3	60571	Heat loss due to radiation and convection losses from kiln shell and cooler	56439	25
	312000	Heat carried in by coal	206000	
	18000	Exothermic reaction	18000	
	110	Organic matter in the coal	110	
	28 percent	Efficiency of kiln	41 percent	

It is evident that the higher output and efficiency in the semi-dry kiln was possible due to the longer distance in the kiln over which "high-grade" heat is transmitted.



Comparison of heat efficiencies. The top drawing represents a wet process rotary kiln, with a semi-dry process rotary kiln sketched below

BROADENED ACTIVITIES BRING RECORD ATTENDANCE TO N.A.L.A. CONVENTION

A RECORD-BREAKING ATTENDANCE was established at the sixth annual convention of the National Agricultural Limestone Association held January 16-18 at the Hotel Statler, Washington, D. C. There were 328 in attendance, from 38 states, comprising the largest number of members at any convention, the largest number of non-members and guests, ladies, and the greatest turn-out of U. S. senators and representatives (107) to attend the annual reception and banquet.

This year's program was without question the most informative and interesting one held to date. It was well-rounded and included an outstanding panel discussion of plant operating problems, a panel discussion on sales promotion as well as timely papers from top-ranking government officials and agricultural experts.

The surprising attendance and the continued growth of membership are a reflection of the broadened activities of the association into an enlarged program of services for its members in addition to continuing the principal function for which it was organized, in representing its members before Congress, the Department of Agriculture and other government agencies.

Principally through the activities of executive secretary Robert M. Koch and his office, the association is continuing its efforts to maintain and obtain larger appropriations by the federal government for soil conservation in recognition of the proven need for greatly increased use of liming materials and other conservation practices but this continuing activity is now being supplemented by great emphasis on other means of guaranteeing sales of agricultural limestone in the future.

The association has enlarged its promotional efforts by inaugurating several new services which are being well received. Among them are semi-monthly newspaper releases, rural mailing campaigns, transcribed broadcasts for radio, circular advertising and news releases. Some 400,000 circulars have been purchased by members for individual use from the association headquarters since the service was made available, and there is an increasing use of re-printed articles and films now available. Types of material prepared for use in educational promotion among farmers emphasize good conservation practices, the need for liming, methods of application and benefits that come from the practice.

In order to increase the scope of activities, and to permit a program of field travel in the interest of the liming program and membership, the Washington staff has been enlarged this past year, to include three girls in addition to assistant executive secretary, Edward Brunenkant. During 1950, Mr. Koch spent 73 days in travel, visiting member companies and in attending regional and national meetings.

Total membership, including associates and distributors, has been increased over the 300 figure and there are currently some 170 active member companies. The association is in good financial situation and has had a substantial budget approved in order to continue an enlarged program of operations.

The convention started with a meeting of the board of directors at which time there developed considerable informal discussion on the relative merits of the contract system, and purchase orders in handling sales of agricultural limestone. There is considerable concern over the low prices received at this time for the industry's product.

Vice-president Barney T. Scharbach called the convention to order and presided over the opening session in the absence of president Vincent H. Shea who was unexpectedly called away from the meeting. Then followed the reading of the minutes of the last meeting, the treasurer's report, the executive secretary's report and those of the committee chairmen.

Presiding Officers

Robert Patton, Columbus, Ohio, was chairman of an entire session for the consideration of plant production problems, and did an outstanding job in keeping the discussion along lines to develop the maximum of practical ideas for the improvement of plant operations. A third session, under the chairmanship of Leonard Fry, Mercersburg, Penn., was a merchandising program featured by an address, "Lime Plus Fertilizer by Prescription" by Les W. Hayes, L. W. Hayes, Inc., Kansas City, Mo. The session concluded with two talks by government officials covering the national picture and the functioning emergency agencies in Washington.

Earl Heckathorn presided over the concluding session which heard Major General Lewis B. Hershey present a talk, "Selective Service and Your Industry"; a talk "For the Land's Sake Let's Protect It—For the Sake of Our Land" by Harold K. Hill, Production and Marketing Administration; and an informal talk on sales promotion by Sam Schneider, Radio Farm Director of radio station KVOO, Tulsa, Okla.

John M. Deely, Lee, Mass., was presiding officer for a luncheon which featured a dynamic talk, "The Sky's The Limit," by Dr. Tennyson Guyer who is in great demand as a speaker over the country. Dr. Guyer's talk was crammed with humorous anecdotes, and a unique philosophy, which all added up to injecting some optimism and enthusiasm into his listeners. Barney T. Scharbach was chairman for a second luncheon. "The Economic Situation" was the subject of an address by R. M. Evans, a member of the Board of Governors of the Federal Reserve System.

A reception and banquet for members and guests, including a good turn-out of congressmen, concluded the convention. Congressman George H. Christopher of Missouri, who has long been one of the stauncest supporters in Washington for an adequate soil conservation program, gave the banquet address. His talk, entitled "Lime and Our National Economy," gave a strong boost to the need for liming the nation's soil and was supported by plenty of evidence that presented a convincing story on the value and need of liming. Mr. Christopher recently was appointed Assistant to the Director of the Agricultural Conservation Programs Branch, P.M.A., U. S. Department of Agriculture.

Mrs. Alvin Armbrust and Mrs. Arthur Alvis were co-chairmen of the ladies entertainment program. Among the events were a fashion show, shopping tours and a dinner dance at one of Washington's leading hotels.

Officers - Directors

All the officers were re-elected to serve for another year. Vincent H. Shea, Hoosac Valley Lime Co., Adams, Mass., is president of N.A.L.A.; B. T. Scharbach, Sand & Stone, Inc., Essexville, Mich., is vice-president; N. G. Farber, Farber White Limestone Co., Franklin, N. J., is treasurer; Robert M. Koch, executive secretary; and Edward J. Brunenkant, Jr., assistant executive secretary.

Regional vice-presidents are C. P. Haun, Franklin Limestone Co., Nashville, Tenn. (East Central); Perry Pederson, Pederson Bros., Harmony, Mich. (North Central); William J. Clark, Munnsville Limestone Corp.,

Knott C. Rankin, Rockland-Rockport Lime Co., Inc., Rockland, Me.; William E. Horne, Limestone Products Corp. of America, Newton, N. J.; A. E. Orff, Rockland-Rockport Lime Co., Inc., Rockland, Me.

J. H. Kaiser, Solvay Sales Corp., Syracuse, N. Y.; Harold K. Hill, Assistant Administrator for PMA, U.S.D.A.; B. F. Taylor, Cowan Stone Co., Cowan, Tenn.

Munnsville, N. Y. (Northeast); Don L. McCullough, Alabama Aggregate Co., Birmingham, Ala. (Southern); and A. M. Blumer, San Francisco, Calif. (Western).

Leo L. Davis, Plum Run Stone Div., New York Coal Sales Co., Chillicothe, Ohio, was re-elected to the board for a three-year term; James Eells, Basic Dolomite, Cleveland, Ohio; R. W. Hunt, Southwest Lime Co., Neosho, Mo.; Einar Nielsen, Hector Construction Co., Caledonia, Minn., were elected to terms expiring in 1954; and W. J. Sprow, Jr., The Wagner Quarries Co., Sandusky, Ohio.

Completing the board of directors are Arthur Alvis, Butler, Mo.; Alvin R. Armbrust, Fayette Limestone Co., Washington C. H., Ohio; C. A. Broecker, Newton County Stone Co., Kentland, Ind.; John M. Deely, Lee Lime Corp., Lee, Mass.; Merrill M. Green, Carrollton, Mo.; Herbert C. Gray, Acme Materials Co., Tulsa, Okla.; Cale P. Haun, Franklin Limestone Co., Nashville, Tenn.; Earl L. Heckathorn, Stuntz-Yeoman Co., Delphi, Ind.; William E. Horne, Limestone Products Corp., Newton, N. J.; John C. Jeffrey, Parma, Mich.; D. L. McCullough, Alabama Aggregate Co., Birmingham, Ala.; Clarence A. Munz, Eastern Rock Products Corp., Utica, N. Y.; Robert J. Pleasant, Anchor Stone and Materials Co., Tulsa, Okla.; R. H. Schneckloth, Lowden Rock Products Co., Lowden, Iowa; R. M. Seifried, National Lime and Stone Co., Findlay, Ohio; Vincent H. Shea, Hoosac Valley Lime Co., Adams, Mass.; Thomas B. Stafford, Vermarco Lime Co., Proctor, Vt.; and John H. Wagner, Meadowview Lime Co., Meadowview, Va.

Committee Reports

Following the reading of the minutes for the last meeting by Mr. Koch, treasurer N. G. Farber reported that the year 1950 was successful from a financial standpoint. Buford Clark, in reporting for the finance committee, itemized the anticipated revenue for the current year and presented the budget.

Robert M. Patton, chairman of the membership committee, had a very encouraging report. There were some resignations during the past year but the addition of new members was sufficient to more than offset the loss of revenue. The quality of the members added during 1950 was considered excellent and it is believed that membership has become stabilized on a firm footing. Mr. Patton was high in his praise for the good work of Burt F. Taylor, Cowan, Tenn., in increasing membership. Mr. Taylor was credited with putting on a drive that was largely responsible for the addition of 21 new distributor members and seven associate members.

J. M. Deely, chairman of the legislative committee, said that the association, largely due to the personal efforts of executive secretary Robert Koch, had a great many influential friends in official Washington sympathetic to the liming program, and

Mrs. Tennyson Guyer; Major-General Lewis B. Hershey, Director of Selective Service; and Dr. Tennyson Guyer, Findlay, Ohio, one of the featured speakers

George S. Harvey, Arkell & Smiths, New York, N. Y.; T. B. Stafford, Vermarco Lime Co., Proctor, Vt.; John M. Deely, Lee Lime Corp., Lee, Mass.

R. M. Seifried, National Lime and Stone Co., Findlay, Ohio, and Dr. and Mrs. Tennyson Guyer, Findlay, Ohio, discussing problems. Dr. Guyer was one of the featured speakers

James Eells, Basic Dolomite, Cleveland, Ohio; B. T. Scharbach, vice-president of N.A.L.A., Sand & Stone Inc., Essexville, Mich.; George W. Mintz, Michigan Limestone & Chemical Co., Buffalo, N. Y.; John C. Jeffrey, Jeffrey Lime Co., Parma, Mich.

Alvin Armbrust, Fayette Limestone Co., Washington C. H., Ohio; Robert M. Patton, Plum Run Stone Div., N. Y. Coal Sales Co., Columbus, Ohio; and Robert M. Koch, executive secretary

that a better understanding of the purpose and value of liming had been effected. This recognition, he said, has been gained because the industry has submerged its selfish interests in its approach with government officials and, instead, has continued to express its sincere interest in the welfare of the farmer.

C. P. Haun, chairman of the percentage depletion committee, commented briefly on the association's efforts and prospects to secure percentage depletion. The association will continue its efforts to secure recognition and it was the opinion of many that the present time might be a propitious one in which to get action.

Executive secretary Robert Koch, in his annual message, touched upon the many activities which now require the attention of his office in Washington in order to keep the members informed of legislative and restrictive measures. He expressed his pleasure that the membership had authorized the necessary enlarged program of activities. In commenting on membership, Mr. Koch expressed confidence that there will be increased participation.

Primary interest of the organization, he said, continues to be in directing efforts to the attainment of the greatest possible appropriation of federal funds for soil conservation. Much of his time has been, and continues to be, spent in contacts with congressmen, officials of the Department of Agriculture and others who have influence in agricultural and legislative decisions. The immediate goal, he emphasized, is to shoot for a $500 million annual program which would be modest in view of the fact that figures from State universities show a need for three times that expenditure.

Mr. Koch believes that there is a good chance to get the appropriation increased and he credited congressman George H. Christopher with having gotten the ball rolling toward an increased appropriation. At present an expenditure of $285 million has been approved for the 1952 program. Mr. Koch detailed briefly the problems and events that led up to that figure. He has not only been active in his association with Democratic members of Congress but also influential Republicans. If an across-the-board reduction on all non-defense spending is made necessary, he does not believe the cut in funds for soil conservation would be reduced more than 10 percent.

As to the outlook for business, he touched upon experiences during the past war when fertilizers were scarce and sales of liming materials increased as a result.

Economic Situation

R. M. Evans, Federal Reserve System, in his luncheon address, started out by saying that it was almost im-

possible to predict the outlook for business in the future with any degree of accuracy. Inflation, he said, had a good start before the Korean war and constitutes a greater danger to the nation than war itself. Inflation, he pointed out, has led to dictatorship in other nations.

Excessive amount of available credit was given as the main cause for inflationary pressures and Mr. Evans said that heavier taxation and the balancing of the federal budget were essential to preserving a stable economy. His parting shot was that we can lick communism and still be wrecked by inflation.

Operating Problems

An entire afternoon was set aside for a round table discussion on operating problems and the discussion, under the chairmanship of Robert Patton, was extremely well received and productive of many ideas for reduced operating costs. A panel of experts in the fields of crushing, pulverizing, spreading, maintenance and blasting led the discussion and answered questions. The session lasted until well beyond the allotted time, and the number and variety of questions indicated an intense interest in finding ways and means of cutting costs.

Manufacturers participating in the panel discussion included A. T. Glynn, Sturtevant Mill Co., Boston, Mass.; C. W. Mayer, Bradley Pulverizer Co., Allentown, Penn.; C. L. Rosselot, Even Spread Co., Owensville, Ohio; J. K. Towers, Hardinge Co., Inc., York, Penn.; W. C. Varey and H. Weinig, Hammond Bag and Paper Co., Wellsburg, W. Va.; H. A. Wendler, Highway Equipment Co., Inc., Cedar Rapids, Iowa; C. R. Atherton, Atherton & Evans, Consulting Engineers, Annville, Penn.; David S. Gray, Baughman Manufacturing Co., Jerseyville, Ill.; J. E. Jenkins, Vibration Measurement Engineers, Chicago, Ill.; George N. Rule, Hercules Steel Products Corp., Galion, Ohio; and C. E. Yates, Stoody Co., Whittier, Calif. Each member of this panel was called upon for brief comment, after which time was allotted for questions and discussion.

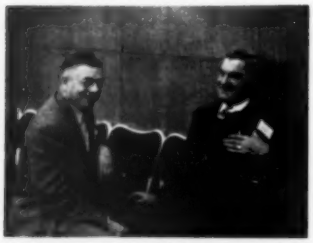
The main question on the subject of bags was with regard to price increases during the past year on multiple-wall paper bags. According to some producers, prices had been raised four times in 1950 and the effect has amounted to 25 cents per ton of liming materials. The manufacturers present stated that they buy all their paper requirements and must pay the going prices. In answer to another question, it was recommended that because of scarcity and costs lining not be used in railroad cars unless absolutely necessary.

There was a great deal of interest in the talk by Mr. Jenkins relating to

Leonard W. Preston, Gasaway Construction Co., Glasgow, Ky.; Rep. Noble J. Gregory of Kentucky; Miss Elizabeth Gray, Cedar Bluff Stone Co., Princeton, Ky.; and Rep. Joe B. Bates of Kentucky

Roy J. Ratliff, Butler, Mo.; Arthur R. Alvis, Butler, Mo.; Rep. Paul C. Jones of Missouri; and Mrs. Arthur R. Alvis, co-chairman of ladies' entertainment

Mr. and Mrs. William Gerhart, Fry Coal & Stone Co., Mercersburg, Penn.; C. Roy Binkley, Binkley Bros., Dry Run, Penn., Mrs. and Leonard Fry, Fry Coal & Stone Co., Mercersburg, Penn.; Rep. James F. Lind of Pennsylvania



Clarence A. Munz, Eastern Rock Products Corp., Utica, N. Y., and N. G. Farber, treasurer of N.A.L.A.

Mr. and Mrs. Les W. Hayes, L. W. Hayes, Inc., Kansas City, Mo.

Dr. Cole P. Haun, Franklin Limestone Co., Nashville, Tenn., and Mrs. Haun

Thomas B. Stafford, Vermarco Lime Co., Proctor, Vt.

drilling and blasting and the use of seismology to control blasting and to make records of blasting. There seem to be many more complaints than we ordinarily hear about around the country, that blasting causes damage to residences, etc. Mr. Jenkins told of experiences, encountered when he has been called in as an expert where damage complaints have been filed and discussed, in some details, the factors that influence the extent and degree of earth- and air-borne vibrations.

It was particularly interesting to producers that vibration measurements can be used to advantage in determining how to blast stone to best advantage, and for most economical results. A point that was emphasized in this regard is that all rock formations have individual characteristics that must be determined for each specific quarry and condition.

Mr. Jenkins said that he will soon offer a new plan for nation-wide coverage that will make available vibration measurement service at low unit cost to the individual quarry operator. It will consist of a small package seismograph and charge will be made only for tape on which the vibrations are recorded. This will enable producers to back up their blasting activities with records that can be used for defense purposes in event of suits claiming damages.

In answer to questions, Mr. Jenkins told of cases where, through seismic observations, blasting charges have been increased safely in quarries where complaints had been filed earlier when smaller blasts had been made. The cost for such service, in a given case, amounted to four cents per ton covering 22 tests but, he said, the cost was actually extremely small when spread over a year's operations.

In answer to another question, it was stated that the area of turbulence, which is the area of build up before propagation, is normally within a 500-ft. radius. There were questions about the influence of geologic conditions on results from blasting. It was pointed out that vibrations that may be transmitted to a structure standing on solid rock likely would be much less severe than if the structure had been built on overburden. The greater the depth, he said, the greater the vibration but the less the transmission distance.

Answering a question about factors influencing the amount of concussion from blasting, Mr. Jenkins said that temperature, wind direction and other variables all contribute to erratic effects. In conclusion, he said that vibration measurement tests have been accepted by the courts as authentic evidence in 13 states thus far in which complaints have been filed. Generally, claims of damages incurred from blasting are exaggerated and the problem is one to be met through education of the people.

Discussion on crushing and pulverizing was led off by Robert Patton, who asked the panel of experts to recommend the best method for reduction of common excess sizes of stone into fine sizes that may be marketed. He was referring particularly to ⅜-in. minus material from which the minus No. 8 (agstone) had been removed and wanted information on how to process the minus ⅜ plus No. 8 material into agricultural materials or mine dust.

Mr. Towers said that that size range constituted an ideal feed for a ball mill with air classifier in closed circuit and employing mill level control for optimum rate of feed. Mr. Mayer said that the Bradley mill, in grinding such feed to a fineness all through 20 mesh, would produce a product containing 60 percent minus 200-mesh fines and that with some limestones the product would be sufficiently fine for mine dust. For making an extremely fine-ground product, he recommended use of the ball mill. It was pointed out in the production of fines that maintenance is the determining factor in selection of types of equipment.

Leonard Fry, Fry Coal & Stone Co., Mercersburg, Penn., was asked to tell his experience in the use of Bradley mills for production of agricultural limestone. Mr. Fry is producing a product that must all pass a 20-mesh screen and the size of feed is unusually large for that type of mill which is classed as a roller-type with circular screen which governs the size of product discharged. With a feed of ½- to 1¼ or 1½-in. stone, and using 16-mesh slotted screen cloth in the mill, he is getting 7½ t.p.h. from each mill where he is feeding a dried material. In the other two of three mills, with a feed of undried stone, the production is 6 to 6½ t.p.h.

A rotary dryer is being used in connection with one mill and a second is being installed because experience has proven that it pays to dry the stone. Lowered maintenance and less overloading of the mill result from use of a dry feed. The mills are the small Bradley, Junior, model. Previously, Mr. Fry had used hammermills in closed circuit with vibrating screens and had experienced high maintenance costs with his stone.

A discussion of the relative merits of closed-circuit pulverizing and open-circuit operation followed. The general opinion was that closed-circuit grinding ordinarily is desirable in order to increase production, but there was some disagreement as to whether or not it would benefit to operate mills of the type used by Mr. Fry in closed circuit with separate screens. It had been suggested that greater output might result if larger openings in the mill screen be used and the stream be put over separate vibrating screens.

Then followed a discussion of the relative power requirements per unit of product using the various types of mills. Many figures were presented but are not reported herein because differing stone characteristics and other variables make it impossible to generalize.

Each of the manufacturers of spreading equipment briefly described his company's equipment and the latest improvements now available to the industry and its truckers. They all emphasized the need for rendering the greatest possible service to the customer and pointed to features which have been developed to minimize segregation, to better handle moist materials, to prevent plugging, breakage of parts, etc. Producers were of the opinion that they should work closely with spreader manufacturers in order to improve the designs of equipment based upon their experiences as operators.

The concluding subject in the operating session was a discussion of maintenance operations revolving around the use of hard-facing materials. C. E. Yates, Stoody Co., led off the discussion and was besieged with questions later, it being obvious that producers anticipate difficulties in procuring equipment and parts and are concerned with ways and means to keep their existing equipment in the best possible operating shape.

Mr. Yates started off with a discussion of his company's product, Stoody alloys, and particularly those for automatic application which speed up application. In answer to a question as to whether it was advisable to build up crawler-type track rails, Mr. Yates said that that was practicable provided that the parts are not completely worn out. He said that high carbon manganese alloy similar to rail steel was available for the purpose.

Alvin Armbrust, Fayette Limestone Co., Washington C. H., Ohio, with Mrs. Armbrust

In answer to a question as to the deposition rate by the automatic process, prompted by the high labor rates prevailing for welders, Mr. Yates said that the speed was far greater than by hand methods of application.

Producers who operate kilns and dryers expressed great interest in the fact that trunnions can be built up in place by the use of a portable setup, thereby saving the great expense of removing the tires for facing. There was interest in learning the cost and availability of machines for automatic and portable application of hard facing. John Wagner, Meadowview Lime Co., Meadowview, Va., brought the discussion to a close by telling of his satisfactory experience in hard-facing all manner of equipment.

Lime Plus Fertilizer

An address "Lime Plus Fertilizer by Prescription" by Les W. Hayes, L. W. Hayes, Inc., Kansas City, Mo., aroused a great deal of interest and stimulated much discussion because it suggested a new approach to the improvement of agriculture and the sale of liming materials. Mr. Hayes recently has made available a custom service at his plant whereby he makes available to farmers liming materials and mixed fertilizers as a package product.

The problem of handling mixed fertilizers has always been a complex and costly process, with no pattern to follow, according to Mr. Hayes, so he took the position that the established agricultural limestone producer, with his established lists of prospects, contacts and sales organization, was the logical one to take the lead in selling fertilizers.

He is supplying a blended material, making available to the farmer his phosphate, nitrogen, potash and liming requirements for complete res-

Reid Callanan, president, National Crushed Stone Association, Callanan Road Improvement Co., South Bethlehem, N. Y.; Clarence A. Munz, Eastern Rock Products, Inc., Utica, N. Y.; Rep. W. S. Cole of New York

Grant Russell, Eastern Rock Products, Inc., Utica, N. Y.; H. C. Gray, Acme Materials Co., Tulsa, Okla., discussing agricultural problems with the new assistant to the director of the Agricultural Conservation Program, George H. Christopher

Harry Wendler, Highway Equipment Co., Inc., Cedar Rapids, Iowa; Mrs. Robert H. Schneckloth, Lowden, Iowa; Rep. A. Sidney Camp of Georgia; Rep. B. F. Jensen of Iowa; Robert H. Schneckloth, Lowden Rock Products Co., Lowden, Iowa

Mrs. Alvin R. Armbrust, Washington C. H., Ohio (Fayette Limestone Co.,) co-chairman for ladies' entertainment

L. W. Hayes, L. W. Hayes, Inc., Kansas City, Mo., speaking on mixed fertilizers

toration of the needed soil minerals. One of the problems in applying fertilizers had always been in spreading small quantities of high-priced materials economically and without waste.

In setting up facilities to supply a blended material, recognition was given to the necessity for spreading the blend quickly in order to prevent chemical reaction so the practice is to custom-mix the materials. Two bulk cement carriers were purchased and converted, and transmissions were installed on them for mixing and handling the fertilizer materials. Skirt attachments had to be added to the spinners for spreading in order to reduce loss of materials that cost 7 to 10 times as much as agricultural limestone.

A laboratory was set up for soil-testing in order to determine the requirements for phosphate, nitrogen and potash, and to provide one-day service. The application of trace elements is to be considered next.

An adequate publicity program was essential to introduction of the service and it includes radio and newspaper advertising and the distribution of brochures. The use of television is under consideration. Sales policy is based upon accurate analyses and sales are confined solely to farmers who want to meet all the requirements of their soil simultaneously. The cost of restoring all the elements ranges from 20-50 dollars per acre in this area which is being served. While many farmers have been hesitant until they see others using the service, Mr. Hayes' plant has been kept very busy.

The quarry is in Harrison County, Mo., where there is a need for 280,000 tons of rock phosphate alone.

Following Mr. Hayes' address, a number of questions brought forth interesting comment. For one thing, he has two agronomists who are salesmen and who are educating two additional salesmen. A service charge of $25 is made, which pays for the cost of the salesmen. If the service is made available in counties outside the normal marketing area, a setup would be made in another quarry in order to use local sources of supply.

Rock phosphate is shipped in from Wyoming and Utah in hoppered-bottom cars and handled from the cars by screw conveyor. Ammonium sulfate is the source of nitrogen. The average mix is three tons of agricultural limestone with 1500-2000 lb. of mixed fertilizer of which the bulk is rock phosphate. The P.M.A. pays the farmer for phosphate and the agstone according to standard practice.

As to plant and handling facilities, Mr. Hayes said that he has $50,000 invested at the present time, including storage facilities, the two mobile mixers, trucks and a hammermill which is necessary to break down chunks. The agstone is spread first and then the fertilizer blend is immediately applied.

R. W. Hunt, Southwest Lime Co., Neosho, Mo., then described a method he is using for a smaller-scale operation. By hand shoveling, a complete mix with damp agstone is made for application.

Functions of Government

Two representatives of war-born government agencies made short talks, telling of their functions and policies and their relation to the national economy. George Shields of ESA touched upon the gravity of the world situation, shortages and inflation. He particularly stressed the necessity for an all-out war against inflation and heavy taxation. He assured that the government is not trying to change business policies and that restrictions, etc., are being imposed with a view toward the minimum essential interference with business.

He said that the agency will not tolerate special interests and he appealed to producers to interpret the need for restrictions to their customers, in order to justify the need for great sacrifice. He concluded by saying that his agency wanted public understanding and that the door is always open to the association for discussion of problems as they arise.

Erle A. Nash, N.P.A., in discussing the policies and practices of the National Production Authority, promised that no decisions will be made without prior discussion with affected industries.

Manpower

"Selective Service and Your Industry" was the title of an address by Director of Selective Service Major General Lewis B. Hershey. The general gave out a lot of figures in breaking down the possible sources of personnel for the armed forces, to clarify the problem in securing sufficient young and able-bodied men.

As to veterans, he did not indicate that there was any early likeli-

hood of recalling them into service. He justified the military thinking along the lines of prolonged service by saying that men must be held in service longer when there is a shortage of available men. General Hershey is not in favor of drafting older men unless absolutely necessary, and he said that he wanted all the men under 26 years of age.

Agriculture's Challenge

Harold K. Hill, Assistant Administrator for Production, Production and Marketing Administration, U.S.D.A., stressed the great need for keeping farm production at a high level in the years ahead, in a talk which he re-titled "Agriculture's Challenge." Because the nation must have a program of watchful preparedness which may last a long time, he said that we must plan for the worst and that means a program of what may amount to over-production in many lines, including farm products, in order to be safe. Abundance, he said, is also a good hedge against inflation and controls.

Mr. Hill briefly commented on the various emergency agencies that have been created in Washington, their functions and how their respective efforts dovetail into the overall picture.

As far as agriculture is concerned, he said that there cannot be a let-up in soil conservation practices and he stressed the great need for more grasses and pastures in order to produce more meat and grains. The farmers are now in good shape, he said, and we must now shoot for an overproduction in crops to guarantee sufficiency.

Promotion

Due to time limitations, it was necessary to cut short much of the scheduled discussion on promotion and sales but, nevertheless, some good points were brought out. Lynn Stewart, Columbus, Ind., led off the session by telling of the successful use of radio and newspaper advertising in his area and he emphasized the value of the county fairs as a medium of promoting sales. His radio program features a musical theme and his newspaper copy comes from the N.A.L.A. as well as the Agricultural Limestone Institute.

Participation in county fairs has proven particularly productive because of the timeliness, coming just before the liming season. Guessing contests are conducted at the fairs, built around why agstone should be used, and stimulate much interest. At these fairs, practice is to display photographs to show the operations of drilling, blasting and plant operations.

Sam Schneider, Radio Farm Director of station KVOO, Tulsa, Okla., over whose station Bob Pleasant has done considerable excellent advertising, stressed the educational angle in suggesting how to promote sales of agricultural limestone. He believes that a program of education to the public on the value of soil liming is the sound way to protect the industry against efforts to curtail soil conservation appropriations, which are influenced by public opinion.

R. L. Maxwell and M. L. Dake, Coop. G.L.F. Exchange, Ithaca, N. Y.; C. L. Rosselot, Even Spread Co., Owensville, Ohio; N. G. Farber, treasurer of N.A.L.A., Farber White Limestone Co., Franklin, N. J.

The farmer must be sold to the extent, he said, that he will be anxious to apply liming materials. Another point emphasized is that people desire services today more than ever before and are willing to pay for them. Adequate service should be the objective.

The health angle must be continually played up, he said, but current emphasis should be more on the need for increased farm production. A weakness pointed to was in public relations with the farmers, who need to be told more about the experiences of others in the solution of farming problems.

As far as promotion is concerned, he said that it is up to the producer to find good source information and then make it available to those qualified to prepare it for presentation. Farm editors will accept sales releases, if the producer does not insist on putting his address on them, according to Mr. Schneider.

Grinding Tests

DAFFIN MANUFACTURING CO., a division of Lancaster Engineering Corp., has announced the establishment of a research section at its plant in Lancaster, Penn. This new unit will provide free service to industry in solving grinding and various reduction problems. Grinding tests will be conducted, and engineering reports along with samples of the actual tests will be returned to the companies submitting samples. Concerns desiring to take advantage of this service may write and submit samples, giving grinding specifications, to Milling Research Section, Engineering Department, Daffin Manufacturing Co., Lancaster, Penn.

Sam Schneider, Radio Farm Director of station KVOO, Tulsa, Okla., one of the speakers

Discontinues Business

TOM HUDSON, owner and operator of Hudson Stone Products Co., Lynchburg, Ohio, with quarries at nearby Sharpsville, has sold his equipment and discontinued business. All equipment and machinery is being dismantled and moved to Dayton, Ohio, where it will be used by Carey Brothers in the operation of a hot-mix plant. Mr. Hudson started his business in Lynchburg in January, 1942, and estimates he has handled more than 1,500,000 tons of stone in the 9-year period. At present time he has stockpiles of stone which he did not sell, but will sell locally.

Safety Winner

UNIVERSAL ATLAS CEMENT CO., New York, N. Y., was one of the winners of the 8th annual inter-plant accident reduction contest sponsored by the Greater New York Safety council. Plaques for the winning plants and certificates for 101 accident-free operations were presented at the council's annual contest dinner held December 12, 1950.

Pennsylvania Stone Producers Hear Needs for Highway Construction

THE PENNSYLVANIA STONE PRODUCERS Association opened its annual business meeting in the assembly room of the Hotel Penn-Harris, Harrisburg, Penn., at 9 o'clock January 26, 1951.

During the meeting, president T. C. McPoyle made a brief report to the membership, and was followed by H. H. Wagner, who presented the general manager's report. The highlights of this report indicated that the Pennsylvania Stone Producers enjoyed a greater volume of business in 1950 than during any previous year. He also pointed out to the membership that the Pennsylvania Department of Highways had changed its policy when buying stone, gravel or slag, by eliminating the 13 percent differential, which previously existed in favor of slag, and placing them on an equal basis, that is on a straight ton for ton basis.

The following officers and board of directors were unanimously re-elected to serve for 1951:

T. C. McPoyle, sales manager, The John T. Dyer Quarry Co., Birdsboro, Penn., president; Paul I. Detwiler, New Enterprise Stone & Lime Co., New Enterprise, Penn., vice-president; H. M. Binkley, Binkley Bros., Inc., East Petersburg, Penn., treasurer; and W. H. Fehr, president of Berks Products Corp., Reading, Penn., secretary.

J. P. Peacock, manager, Stone & Slag Division, Bethlehem Steel Co., Bethlehem, Penn., and J. C. Showalter, Blue Ball, Penn., board members in Eastern Section of Pennsylvania; Paul Walker, Chambersburg Stone Co., Chambersburg, Penn., and F. I. Narehood, Narehood Bros., Milton, Penn., to serve the Central Section; and Lewis M. Nauss, The Carbon Limestone Co., Lowellville, Ohio, and Robert B. Garman, Tyrone Lime & Stone Co., Tyrone, Penn., to serve as board members for the Western Section of Pennsylvania.

The board of directors of the association re-elected H. H. Wagner, Harrisburg, Penn., general manager for the 16th consecutive year.

The business meeting was adjourned at 10:30 o'clock to the ballroom in the same hotel where the Pennsylvania stone producers acted as host to the sand and gravel, and slag industries and conducted a general meeting of interest to all aggregate producers.

This program included a report from E. L. Schmidt, chief engineer, Pennsylvania Department of Highways, who discussed the traffic problem created in the larger cities. Due to more people living in the suburban and the urban areas, all traveling by automobiles and causing peak loads during the morning and evening hours, the Highway Department made a thorough study of these conditions which, in every instance, required new and wider arteries in order to take care of this increased traffic. He cited that, in many cases, this was the most costly type of highway construction.

The next speaker on the program was C. H. Buckius, assistant chief engineer, of the Pennsylvania Highway Department, who presented a detailed report on the 1951 highway requirements of materials: 1,166,870 tons of bituminous concrete; 3,146,065 bbl. of cement; 1,449,588 tons of sand; 66,202 tons of reinforcing steel; 94,492 tons of structural steel; 43,118,168 gal. of bituminous material, and approximately 10,000,000 tons of coarse aggregates.

W. A. Warrick, chief construction engineer, and N. A. Staples, chief maintenance engineer, W. H. Herman, chief research engineer, all of the Pennsylvania Department of Highways, also addressed the meeting and discussed new phases of problems in their particular field of endeavor.

George A. Rahn, chief materials engineer, Pennsylvania Turnpike Commission, made the following report in part:

"The year 1950 was a banner year for the Pennsylvania Turnpike System. During 1950, including 42 days operation of the new 100-mile Philadelphia Extension, a total of 4,488,528 trucks, buses and passenger cars paid tolls amounting to $9,022,398.31. This is an increase of 16.6 percent in number of vehicles and an increase of 28 percent in revenue over 1949.

"During 1950 the almost 4,500,000 fare-paying vehicles traveled 450,000,000 miles. Non-revenue vehicles, consisting of police, maintenance, supervisory and service, accounted for 23,000,000 more miles, resulting in a total of approximately 473,000,000 miles of travel for the year."

Mr. Rahn also stated that the western extension of the Turnpike from Irwin, Penn., to the Ohio State line, will be completed during the latter part of 1951. When questioned as to new lines in the Pennsylvania Turn-

Fred Coleman, Philadelphia, Penn.; John Rice, Jr., Easton, Penn., both The General Crushed Stone Co., and C. Ralph Binkley, Binkley Bros., Inc., Lititz, Penn.

H. H. Wagner, general manager, Pennsylvania Stone Producers Ass'n., Harrisburg, Penn.; E. L. Schmidt, chief engineer, Pennsylvania Department of Highways; and T. C. McPoyle, president of Pennsylvania Stone Producers Ass'n, and sales manager for The John T. Dyer Quarry Co., Birdsboro, Penn.

pike system, Mr. Rahn reported that no definite plans were being developed in that direction.

The afternoon session was devoted to a study of macadam construction with modern machinery and a discussion of New Jersey Turnpike and flexible type pavements. Motion pictures were used in both instances. Macadam construction was explained by Joseph E. Gray, substituting for Fred E. Swineford, of Macadam Pavements, Inc. George Dent, engineer, Asphalt Institute, substituting for O. J. Porter, of O. J. Porter & Co., explained the discussion of the New Jersey Turnpike and flexible type pavements with a series of slides.

The meeting was adjourned to the assembly room where the stone producers gave a cocktail party for the more than 400 aggregates producers and their friends.

D. E. Smith, Pres., Juniata Limestone Co., Mifflintown, Penn.; H. W. Brown, Capitol Equipment Co., Harrisburg, Penn.; W. O. Faylor, Faylor Lime & Stone Co., Middleburg, Penn.

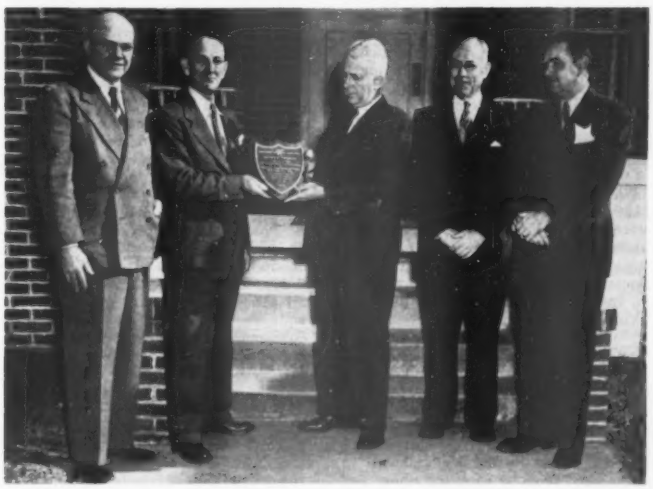
Wins Safety Trophy

TEXAS CONSTRUCTION MATERIAL CO., Houston, Texas, was among the 31 companies out of approximately 8000 entries which achieved outstanding safety records in the safety contest sponsored by the Texas Employers' Insurance Association. Distinguished safety awards were presented to these winning companies. In qualifying for the award, Texas Construction Material Co., in 1949, worked a total of 685,239 man-hours with only six minor compensable accidents, with an average lost time of approximately 12 days. The winning of awards is not new to this company. The Dolan plant at Romayor, Texas, operated more than 100,000 man-hours without a disabling injury in 1948, which was the best safety record achieved in the National Sand and Gravel Association safety competition, conducted by the Bureau of Mines. ROCK PRODUCTS presented the company with a trophy at the annual convention. The Talton, Texas, plant was also presented with a trophy for its 1949 perfect record.

John M. Carley, secretary-treasurer and director of safety for Texas Construction Material Co., attributes the excellent safety record to the following program:

1. A functioning safety committee of supervisors and employes at each plant.
2. Monthly safety meetings.
3. Good cooperation of employes.
4. Personal recognition and reward for safety achievements of employes.
5. First-aid training course for all employes.
6. Safety posters, boards and charts.
7. Requiring each employe involved in an accident to write a statement as to how the accident could have been avoided.
8. Providing and maintaining safe machinery, tools and equipment, and selecting and training employes for the various jobs performed.

The company operates sand and gravel plants at a number of locations in Texas. Phil Gemmer is president and general manager.



Participating in presentation of safety trophy are, left to right: Oscar Ebner, sales representative, and Sam Humphries, district manager, Texas Employers' Insurance Association; Phil Gemmer, president, and John M. Carley, secretary-treasurer and director of safety, Texas Construction Material Co.; and James P. Mitchell, vice-president, Texas Employers' Insurance Association

El Salvador Cement Plant

A $2,000,000 CEMENT PLANT, the first in El Salvador, is being erected near the Pacific port of Acajutla at a location called Playa de las Flores (Beach of the Flowers). It is being financed jointly by Salvadorean and United States private capital. MacDonald Engineering Co., Chicago, Ill., has the construction contract for the plant, and the machinery has been contracted for with Allis-Chalmers Manufacturing Co., Milwaukee, Wis.

The principal raw material will be mollusk shell which are unique in that no crushing will be necessary. American engineers who inspected the site expressed amazement at this unusual occurrence. Officials of the company said the plant is scheduled to begin operations by July or August of 1951 and will have a capacity of 900 bbl. of cement daily. The country's imports during the past two years have averaged about 750 bbl. daily. When the plant begins operations, one of its first major projects will be to furnish cement for the Lempa river dam which is expected to be completed late in 1952.

The Salvador Railway Co., Ltd., which operates a line between San Salvador and Acajutla, is building a branch line to the new cement plant.

Production Symposium

(Continued from page 98)

place or had collected moisture so that the windings simply would not take the high voltage when it was applied to it.

"We are working on a plan now which we believe is going to be far better than anything we have ever used before. We are going to have our storage spaces for motors and companion starting equipment in a reasonably tight building, lined with some type of wallboard, and attempt to maintain an even temperature in those buildings, particularly during the winter months when we expect to hold the temperature to from 80 to 100 deg. F. so that there will not be any sweating. At regular intervals we will inspect the motors and see that they are all right as far as dampness is concerned and, in addition to that, every three months hook up power lines on those motors and actually run them for a matter of an hour or two hours, whether it be a 440-volt motor or a 2200-volt motor. In doing that, we know that we are eliminating a lot of the hazards that a motor might be subjected to when it is set out in an unprotected building. By 'unprotected,' I mean a tin enclosure or something where it can collect a lot of moisture.

"We have gotten to the point now where we feel quite confident that any motor that we take out to put on a machine, as a spare piece of equipment, is going to be perfectly all right to put right to work, and we do that.

"We do a large part of the winding of our motors ourselves. I am quite certain that you fellows from all over the country have been encountering the same thing we have, on motors or anything else, that if you call on the outside shops to do it, it is rather difficult to get a good job done. I do not say that in criticism of our contract shops. They are an absolute necessity for many of us. At the same time, we do business with some of the very big electric repair shops and we find that the big shops are as bad if not worse than the smaller ones from the standpoint of turning out work in a rather haphazard manner; so we do a lot of the winding ourselves and expect to do a whole lot more in the coming months as the times get more critical.

"One thing that must be borne in mind is this critical situation that we are facing in copper. By having spare coils for our equipment in the event we do get a burnout occasionally, we are able to take that motor into our shop and wind it. First of all, we save some money. We had one of the big companies wind a 50-hp. motor for us recently—we furnished the coils—and the bill was $675. It so happened that two or three months later we had another motor of the same size that needed attention and we wound it ourselves. The labor cost was less than $200, so we effected a saving of something like $400 on that job and we are certain that we did a better job than was done by the outside contractor.

"The chief thing in motor maintenance, as in anything else, is inspection. Inspection doesn't just mean looking at a piece of equipment and saying, 'that is all right.' You make various tests, using any instruments that might be used to test it—lights, magneto or anything else—and if you find it isn't up to standard, you fix it. The instruments usually give some warning in the tests and your men are testing to see whether a motor is on the way out. We believe we can save most of our costly operating delays by the proper inspection and maintenance of equipment."

Chairman E. F. Haberkern asked if it was practical to tag motors, especially in small plants, and to record on these tags the performance history of the motor.

Mr. Miller replied: "We have attempted to get some men from outside sources, and that, incidentally, is a very, very important consideration. To bring fellows in from the outside and expect those fellows, in a matter of days or months, to be able to go out and know the equipment and the conditions under which it operates and be able to determine, by making a test with a light or magneto, whether or not that piece of equipment is on the way out, is expecting a good deal. We have found it is far better to take young fellows and train them ourselves. We have a program of training. In one of our plants now we have a chief electrician who has been in this particular plant for about 20 years. Following him, we have an assistant who has been in the department for about 15 years. Following him, we have another young fellow who has been in there about five years, and below him is a fellow who has been with us about seven or eight months now. We attempt to do that so that we always have somebody coming along to take the fellow's place in the event he is sick or an accident takes him off the job.

"In fact, the chief electrician was in a very serious automobile accident last year and he was off for about seven or eight months. During that time, the plant operated just as smoothly as usual because we had somebody training and coming along to take his place in the event such a thing should happen.

"We do believe that, by training our own men, and giving them an opportunity to familiarize themselves with the conditions under which we operate and under which the equipment under their direct supervision operates, we will do far better than we can if we go outside and call in somebody from a contract shop and say, 'We would like to have this motor fixed up.' We are 100 percent in favor of training our own men and bringing them up and letting them learn over a period of years what is the best way to maintain their equipment."

Arthur Buerker, Wallace Stone Co., Bay Port, Mich., asked: "When you speak of a 60-day schedule for lubrication, how many hours a day are you talking about, 10 hr. a day or 24 hr. a day?"

Mr. Miller replied: "Ordinarily, we operate 8 hr. a day. That is a very good question because, where we do recrushing, we naturally have to break that down on a lower number of 24-hr. day periods, and we try to break it down on a basis of 8 hr. If a plant is operating one shift of 8 hr. a day, we would say that is 60 days. If that same motor is operating double-shift, 16 hr., then we go to 30 calendar operating days. That does not mean one month but it means 30 operating days, which in this case would be the equivalent of 60 8-hr. operating days."

Mr. Haberkern asked: "Do you think there is any advantage, for perhaps the small operation that cannot possibly support the personnel replacement program that you have outlined (and I agree it is a very fine one), in having some method of tagging the motor and actually showing a written record of inspection periods and changing of oil and various tests? Do you think that would be of any value?"

Mr. Miller said: "I would like to ask, in turn, who would do the tagging? Who would tag these motors? In other words, who would make the inspection at regular intervals and tag them? Would that be somebody who is familiar with it or somebody you call in from the outside, or just who might put the tag on?"

Mr. Haberkern then commented: "In this particular case I am thinking in terms of our own operations where we do have a chief electrician and he has one or two maintenance men in each plant. However, he can't always be sure that these maintenance men are actually carrying out his program and he would be the one who would make the inspection of the tags, as far as we are concerned. If it was a small operation, say an individual operation, perhaps the plant superintendent or somebody with responsibility for the plant, over-all, would do it. That would be my idea. I am not so sure it is of value. We are thinking about it very seriously, however."

Mr. Miller added: "We have made an attempt to do that on our screen equipment. So far as the electric equipment is concerned, in each plant our chief electrician keeps a record. We have a card system which identifies the motor and its equipment. On any serious breakdown, he will put down on the card what the breakdown might have been, what was done, and the date. That is simply a long-time record on this thing.

"He uses a book which we call a 'grease book,' and in that book a page is set aside for each motor and, as he lubricates the motor, he puts down

the date and what was done and the grease used. If they blow the motor out, he makes a note of that, so that the chief electrician or any of us can go in any time and look at this lubrication book and see just when certain motors have been lubricated. Or if we want to see what has been done on a motor—for example when one burns out—we can look at it and see whether it was one of our winding jobs or some outside contractor who had done it.

"Getting back to your tags, maybe that will work for you, but I don't know, for we have not been successful with them. First of all, these tags are in a very dusty, dirty place. It is hard to keep them from getting all dirty and smeared up with grease and dirt."

Richard Robinson, Massachusetts Broken Stone Co., Weston, Mass.: "I would like to ask Mr. Miller what he considers the merits of dust-collecting equipment in an especially dusty condition to be. I am interested in this because, for the first year in the history of our company, we have gone through a season without a motor failure, due principally to improved dust-collecting equipment. It has been rather expensive and I wondered if you thought it was worth the cost in your larger operations."

Mr. Miller: "I do not believe, without additional maintenance, such as careful inspections and proper lubrication and checking these motors for clearance from time to time, and keeping a close watch on your starting equipment, that there is anything in the dust-collecting that would have kept you from having motor failures. I would not give the dust-collection system 100 percent credit for it. Unquestionably, if you can operate a motor without dust, particularly on the bearings, you will have less wear than you will have if that motor is operating in extremely dusty conditions. Most of them do operate that way and, unquestionably, by ridding the surrounding atmosphere of dust, you will keep a large amount of it out of the bearings.

"We have, as I am sure all of you have, taken motors apart that were just on the point of quitting, and found them so filled up with dirt and dust that sometimes it was difficult to get the rotor out. With a dust-collecting system, that condition just does not exist."

The third subject, "pneumatic tires," excited very little comment except from one speaker who advised frequent inspections of truck tires, including pneumatic pressure check-ups.

Spare Parts

On the subject of spare parts, Abe Goldberg, Allis-Chalmers Manufacturing Co., said one could forestall breakdowns by frequent inspections and that in most cases there was no delay in the manufacture of spare parts but there often was delay in deliveries. He called attention to what

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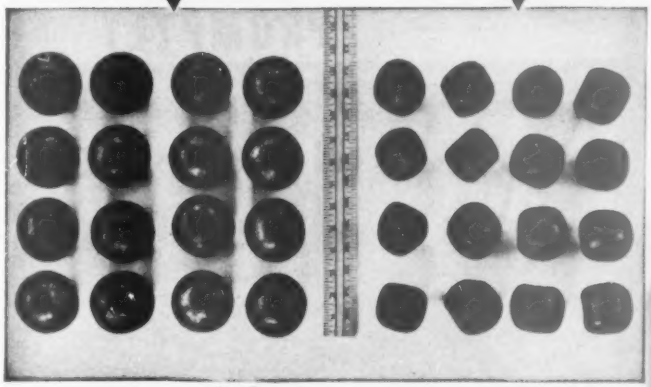
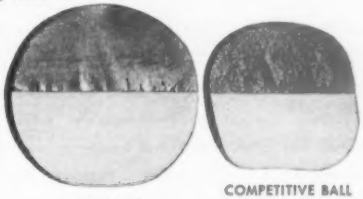
VS.
COMPETITIVE
FORGED BALLS



THERE IS A DIFFERENCE
IN FORGED STEEL BALLS

Again, the longer wearing qualities of Sheffield Moly-Cop balls have been demonstrated. This time in a test grinding barite ore at Magnet Cove Barium Corp., Malvern, Ark.

An equal number of Moly-Cop and competitive forged steel balls were charged into the same mill at the same time and were recovered after 4604 operating hours. All were originally 3½ inch nominal diameter and marked for identification.



MOLY-COP

COMPETITIVE BALL

The recovered test balls are shown in the top photograph. Clearly evident is the difference in rate of wear. The *competitive forged balls wore 38% faster,* based on average diameter loss. Note also the pronounced difference in retention of spherical shape.

Typical fractures of the two types of test balls are shown in the lower photograph. Note the fine, hard, martensitic grain structure of the Moly-Cop ball.

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he called normal vs. emergency bases and advised ordering such parts as pumps and pump gears for large crushers before breakdowns occurred. He suggested during such times as the present, to carry some spare parts cooperatively with other producers who have similar machines in the same area.

The chairman suggested having a list of recommended spare parts from the factory when a new machine was installed.

Dexter Bullard, New York Trap Rock Corp., said a well tagged store room was very helpful to the plant's superintendent.

Cables

The next subject related to "trailer cables," or electric cables used for shovels in quarry operations. Ted Cooke, Lynn Sand & Stone Co., Swampscott, Mass., said the same remarks relating to belt conveyors also applied to electric cables because of slackness in their care. He told of using oil drums at 40- to 50-ft. intervals and draping the cable over the drums so as to keep them off the quarry floor. This also served as a fence to keep trucks from driving over them. He has one pit man who watches, looks after, and is responsible for the electric cables especially when the shovel moves.

Mr. Miller said that secondary blasting was most hazardous to cables and described a three-legged sawhorse with folding legs that he used much along the same lines as the previously mentioned oil drums. He estimated that 90 percent of the damage to electric cables was from flying chips that sourced from blasting. By having the cables looped from support to support and from 6 in. to 36 in. off the ground, when such a cable is struck by a flying piece of rock, it can swing free and receive little damage. Mr. Miller said that cable losses were reduced 50 percent by using the sawhorses.

The sixth subject revolved about winter repairs and one speaker from the middle west said he deferred repairs until March as weather conditions, by that time, had moderated and this expedited repairs.

Dexter Bullard said that his company's superintendents submitted a recommended list of repairs about November 15. These lists were reviewed and an approved list returned to the superintendents so that repairs could be made between January 1 and February 15.

Welding

The seventh subject was "salvaging and rebuilding." Nelson Severinghaus, Consolidated Quarries Co., Decatur, Ga., said he divided this into two types: welding and building up. He told of his use of cast repointers for shovel teeth and of reclaiming gyratory mantels by the use of manganese rods and cited cost figures that indicated savings. He reclaims broken

gear teeth by drilling them and inserting studs, after which the section was built up by the use of the torch. Shovel axles, he said, break most often near their ends so he saves the parts and welds two of the longer pieces near the center (where the strain is least). He briefly described a salvage yard he was laying out to park scrap and other spare parts.

Mr. Miller asked for experience data on the use of metal spraying for round or square metal surfaces; Mr. Severinghaus said he had reclaimed some shafting which had not been badly worn by metal spraying, but results were not too satisfactory. He said he had better luck with electric welding.

Mr. Cooke asked for data relating to the prices received for second hand scrap iron, and if manganese steel scrap was yielding a higher price. It developed that manganese steel scrap usually has to be shipped separately and the chunks of metal have to be of a minimum size and that, at the steel plants, 60 percent of the manganese in the scrap is recoverable. Ordinary scrap was quoted at $20 per ton with manganese steel scrap bringing $40 per ton.

Because of a shortage of time, the last two subjects, "maintenance procedure" and "good housekeeping," were discussed jointly. F. J. Buffington, New York Trap Rock Corp., Newburgh, N. Y., told of the use of a supersonic testing device for testing such items as crusher shafts, etc. He said the service was supplied by Sperry Products, Inc., Danbury, Conn., on a per diem basis. The process consists essentially of affixing a crystal to the end of a shaft; its vibrations are transmitted electrically to a fluorescent screen so that a picture or pattern of a new shaft could be made and compared with one being tested. Shafting in place can be tested. Shafts up to 16 ft. long have been processed but the system works better on short shafts.

On the subject of good housekeeping, he said that it was like the weather . . . "Everyone talks about it but no one does anything about it." He said an employe gauged his employer somewhat by the appearance of his plant and he felt that a good opinion on the employe's part was a valuable asset.

To Produce Asbestos

PACIFIC ASBESTOS CORP., LTD., Montreal, Canada, plans establishment of an asbestos industry in British Columbia, to develop a deposit at Sproat Mountain, two miles from the Canadian Pacific railroad, near Revelstoke.

A private group has furnished an initial $50,000 and is laying plans for an additional sum in excess of $600,000 estimated to be sufficient to reach production. The property purchase agreement calls for start of production by September, 1951.

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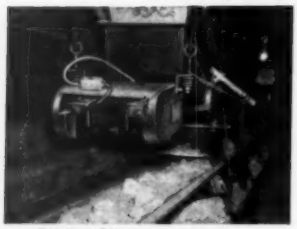

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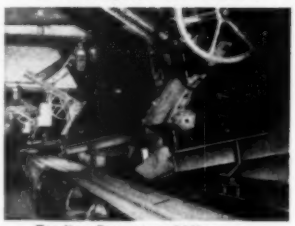
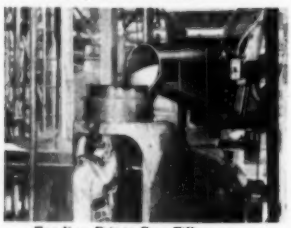


Feeding Sinter in a Mill



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Labor Relations Trends

(Continued from page 59)

Briefly it was in connection with the attempt of a C.I.O. union to use its union-security contract provisions to make an employer discharge a member of the union who allegedly had not paid a fine for non-attendance at union meetings. This was attempted by a subterfuge in the union constitution which was changed to provide for monthly dues of $2, with 50c not collected or as a rebate to those who regularly attended the monthly meetings. The International Union had provided for $1.50 monthly dues for the Locals. The employer extracted and passed on to the union the $1.50 regular dues, and the union used this to pay fines for alleged non-attendance. The union then claimed the victim was behind in his regular dues, and asked the employer to fire him, which was done.

The N.L.R.B. decided that the 50c added to the monthly dues for non-attendance was not a legitimate increase in dues, as contended by the union, but a fine. Under the Taft-Hartley Act, the employer under a maintenance-of-union contract has no right or authority to collect any other than the lawful dues and fees, which all other members alike pay. The employe's authorization for his dues check-off was held to cover only the legitimate monthly dues of $1.50. Any fines thus collected must be done only through a check-off provision specifically authorized by the employe. The Board went further and warned employers that they can have reasonable grounds to doubt that a request for discharge of an employe has some other motive than his failure to pay his regular dues, when the employer himself has been checking off such dues. The employe was returned to his job, and both the union and the employer were held separately and individually liable for making good his lost pay.

Canadian Feldspar Deposit

THE DEPARTMENT OF NATURAL RESOURCES has announced that an analysis of Saskatchewan's first major find of feldspar has shown it to be of high quality and suitable for use in the manufacture of pottery and glass. The feldspar was discovered during a radioactive investigation in the Nunn Lake area, 40 miles east of Lac La Ronge in northern Saskatchewan.

To Build Lime Plant

UNITED STATES LIME PRODUCTS CORP., Los Angeles, Calif., has announced plans for the construction of a $1,500,000 lime plant in Portland, Ore. Limestone will be brought to the plant by barge from Kosciusko Island, Alaska. The company has leased properties at Edna Bay, Alaska, from Aluminum Co. of America and has acquired a fleet of barges for movement of the limerock. Construction of the plant will be started as soon as priorities and financing are arranged.

Survey of Canadian Rock Products Industry

A REPORT PREPARED BY The Mines Branch, Ottawa, Canada, contains a resume of the activity of various branches of the Canadian rock products industry during 1949. The year, the report indicates, was an eventful one for the Canadian asbestos industry, with extensive research programs carried out on various ore bodies. Modernization of established mills and haulage systems was carried out. Progress was made in the changeover from open-pit to underground mining by the method known as block-caving by producers in the Thetford Mines and Asbestos districts of Quebec. Recovery of short fiber from old refuse dumps was started.

An outstanding development was the opening of a new and important asbestos-bearing area in northern Ontario by Canadian Johns-Manville, Ltd. By the end of the year several deposits had been delimited, the largest of which is 2200 ft. long and 800 ft. wide, and which has been proved to a depth of over 780 ft. A mill to treat 100 tons of ore per hour was under construction and the first unit of 50 t.p.h. capacity is now in operation. The asbestos is a harsh variety of chrysotile of the cross fiber type, occurs in veins up to one inch wide, and is well suited to the production of asbestos-cement products. Active prospecting is being done by a number of other companies in this new field.

In 1949, exports of chrysotile materials amounted to 352,718 tons valued at $13,748,661.

Production of portland cement in Canada in 1949 reached a peak of 15,916,564 bbl. but it was not sufficient to meet the continued demands of the construction industry. Several major engineering developments absorbed large quantities. Despite an increase in production of 1,800,000 bbl. over 1948, a total of 2,284,001 bbl. was imported, chiefly from the United States. Shipment from the United Kingdom reached a peak and amounted to over 20 percent of the total imports.

New kilns were completed and put in operation at the Belleville plant of Canada Cement Co. and at the St. Mary's Cement Co. in Ontario. Medusa Products Co. of Canada, Ltd., is importing clinker for grinding to produce white cement and other cement products at its plant at Paris, Ont.

Production of Canadian gypsum was slightly lower in 1949 than in 1948, the record year, due to a decline in exports from Nova Scotia, but the value of the 1949 production was about 7 percent higher. Over 80 percent of the Canadian output of crude gypsum comes from Nova Scotia. Canadian production amounted to 3,005,611 tons, valued at $5,936,592 in 1949. In the same year exports to the United States amounted to 2,544,708

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tons, valued at $2,640,071.

Production of lime in Canada in 1949 continued at a high level, amounting to 1,019,210 tons valued at $10,900,000. The continued strong demand came from the chemical, metallurgical and construction industries. Ontario accounted for 48 percent of the total output and Quebec for 37.5 percent. British Columbia, Manitoba, Alberta, New Brunswick, and Newfoundland produced the remainder.

Quarry production in Canada in 1949 exclusive of stone for the cement and lime industries amounted to 10,928,000 tons valued at $13,197,000 as compared with 10,003,142 tons valued at $12,523,275 in 1948. The overall production in 1949 exceeded 16,000,000 tons.

Production of sand and gravel in Canada in 1949 amounted to 60,627,162 tons valued at $28,374,777 compared with the peak production of 68,670,863 tons valued at $30,629,596 in 1948. The demand for sand and gravel continues strong in the building industry, but in some provinces less gravel went into the building or improvement of roads.

Concrete, road building, and concrete construction absorb most of the sand and gravel output. Most of the gravel used for road work comes from pits worked exclusively for that purpose. A large part of the gravel now used is crushed, screened and washed, and the use of gravel thus processed is increasing steadily.

Melvin Baker Comments On Business Outlook

A RECENT ADVERTISEMENT in *The Wall Street Journal* gave the views of Melvin H. Baker, president of National Gypsum Co., Buffalo, N. Y., on the outlook in 1951 for the building material industry, in general, and National Gypsum's, in particular. Mr. Baker stated that since "Regulation X" was imposed, thousands of business men have asked him, "What kind of year will 1951 be for the building material industry?" His reply was, "An interesting and busy year," and he gave many reasons for believing so.

Mr. Baker stated that many people thought that Regulation X, with its stiff credit terms affecting new homes, was intended to bring about a drastic reduction in new building activity. On the contrary, he believed, according to the government's own statement, the expressed purpose of Regulation X is simply "to maintain a level of production sufficiently high to fill the vital demands of an expanding national defense program during this critical period, while continuing to meet essential civilian needs." He stated that the building industry is geared to an annual production of 1,000,000 homes, and it was his understanding that residential housing would not be decreased much below 800,000 units, the balance of materials going for military uses. He predicted that building will continue at

a high level of production all through 1951, and longer—that estimates of a need for a million homes a year for 10 years still holds good.

Mr. Baker further stated that in the event of all-out war, National's production would be adapted to military requirements, as it was during World War II. The capacity of the company's lime plants would go into steel, chemicals and agriculture; the metal lath plant would again be converted to the manufacture of airplane landing mats; gypsum board, paper and rock wool would also go into war uses.

During the last five years, the company's plants have been re-tooled and modernized and two new plants built. Plans for 1951 include the construction of a 4th paper mill and major additions to existing plants, at a cost of $10,000,000. Already, production of each basic commodity has been doubled to meet the needs of a rising economy. As to shortages and advancing prices, Mr. Baker pointed out that the materials from which most company products are made come from National's own mineral deposits and timber holdings; also, investments in paper mills, ships and the manufacture of certain chemicals make the company largely self-contained, and permit continuous production at low cost.

Opens Gravel Pit

ST. EDWARD SAND AND GRAVEL CO., St. Edward, Neb., has started excavating in a pit 1½ miles north of St. Edward. Clarence Imus and Asher Long are the operators.

Directors' Meeting

NORTHWESTERN STATES PORTLAND CEMENT CO., Mason City, Iowa, at its annual stockholders' meeting, reported that the company had had a normal year of operation despite difficulties connected with replacement of power installations and other construction the past year. Hanford MacNider, company president, stated that production was as high or higher than any previous year and all cement was sold to meet the demands of heavy construction in that area. He also reported, that despite the necessity of absorbing higher taxes, earnings of the company had met dividend requirements by a comfortable margin. Mr. MacNider further reported that rapid progress is being made in the installation of dust collectors in various departments of the plant and that all installations should be completed by early spring.

At the directors' meeting, the following officers were re-elected: Hanford MacNider, president and general manager; B. A. MacDonald, vice-president and assistant general manager; E. C. Frudden, vice-president; Peter Andersen, secretary-treasurer, and G. L. Leaman, assistant secretary-treasurer.

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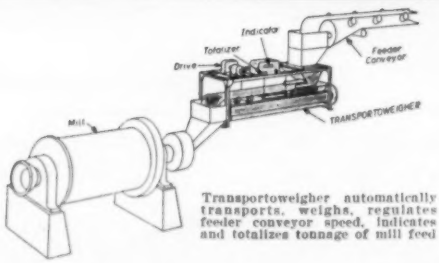

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New Incorporations

Butler Sand & Gravel Co., Inc., Sterling, Ill., was recently incorporated with 5000 shares of common stock, par value, $20. The incorporators are M. C. Burt, Ruth G. Butler and Glenn E. Butler. The company will deal in concrete, sand and gravel.

St. Rose Quarry Co., Inc., Carlyle, Ill., has filed articles of incorporation. Incorporators are Arthur Buehne, Charles A. Mayes, and J. L. Jenkins.

Arkansas Marble and Stone Co., Batesville, Ark., has filed articles of incorporation at Little Rock, Ark., with a capital listed at $500,000.

Central Sand and Gravel Co., Inc., Alexandria, La., was recently incorporated with $50,000 capitalization. The firm will deal in gravel and clay.

Alamo Sand & Gravel Co., San Antonio, Tex., has been incorporated with $4000 capital stock by D. E. Stimson, T. W. Everett and M. F. Robinson.

Brookshire Sand and Gravel Co., Brookshire, Tex., has been granted a charter for a 50-year term, with $10,000 capital. Incorporators are Mrs. J. R. Nesbitt, Horace Spinks and B. Ellis.

Jackson Sand & Gravel Co., Inc., Jackson, La., has been incorporated with a minimum capital of $20,000.

Midwest Rock Wool, Inc., Kansas City, Kan., was recently incorporated with $15,000 capital. Alan W. Farley is resident agent.

The Geyser Gypsum Co., Geyser, Mont., was recently incorporated with $150,000 capitalization. The incorporators are Ewing Strom, James McKay and Ernest C. Martin.

Western Gravel Co., Snyder, Texas, was recently incorporated with $12,000 capital stock. The incorporators are F. C. Taylor, R. C. Taylor and Warren M. Ringgold.

Northwest Sand & Gravel Co., Milwaukee, Wis., was recently incorporated with 400 shares of capital stock at $100 per share. The company will deal in sand, gravel, stone and other minerals. The incorporators are H. J. Sanville, Rose Berman and Milton M. Cohn.

Andrews Concrete Products, Inc., Mason City, Iowa, has been incorporated with 100 shares of common stock without nominal or par value. The company will deal in ready-mixed concrete and concrete products. Ray T. Andrews is president of the new company.

Insol Block Co., St. Paul, Minn., has filed articles of incorporation, with 2500 shares, par value $10 each. The incorporators are T. W. Becken, Howard Dale, C. C. Anderson and H. R. Tregilgas. The company will deal in building block and materials.

Nellis Limestone Quarry, Inc., Ripon, Wis., was recently incorporated with 750 shares of stock, par value, $100, and a minimum capital of $20,000. The company will quarry

and process limestone, sand and gravel.

Inland Sand and Gravel Co., Bridgeport, Wash., has been granted articles of incorporation. The capital stock is listed at $50,000.

Warren Gravel Producers, Inc., Beaumont, Texas, has recently been incorporated by W. L. Trotti, J. T. Thomson and O. E. Chessher. Capital stock amounts to $3000.

Comanche Limestone Co., Comanche, Texas, was incorporated recently with $10,000 capital stock by E. E. Blackwood, W. D. Blackwood and J. V. Carter, Jr.

Oglesby White Lime Rock Corp., Oglesby, Texas, has been chartered by A. F. Daniel, Albert Pavlas and Joe Pavlas. Capital stock is listed at $5000.

Coastal Builders Supply Co., Charleston, S. C., has been chartered to deal in stone, gravel, sand and other building supplies. Capital stock is listed at $30,000. Leonard S. Crounover is president of the company.

Hales Corners Materials Corp., Hales Corners, Wis., has been organized to deal in sand, gravel, lumber, etc., by Hilbert G. and Ruth E. Krause. There are 250 shares, $100 each.

Oak Ridge Sand Co., Mulberry, Fla., has been granted articles of incorporation, with 333⅓ shares of no par value and 666⅔ shares of $100 par value. The company will deal in mine and building sand. The incorporators are R. H. Clark, C. W. Rex, H. M. Clark, C. A. Becker, E. S. Heatman and J. W. Booream.

Champion Inc., Milwaukee, Wis., has been incorporated with 2000 shares of stock at $100 each. The company will deal in sand, gravel, building and road contracting, etc. Louis C. Verette is president of the company, Joseph J. Rigoni, vice-president and John D. Verette, secretary.

Wisconsin Dura-Brick Co., Milwaukee, Wis., has been incorporated with a capital stock of $500 to manufacture and deal in brick, stone, cement, lumber, etc. Iver B. Strandburg, Helen Powell, and Clayton Meyer are the incorporators.

Ellis Quarries, Inc., Sharon, Wis., has been incorporated with 250 shares of stock, par value $100, and a minimum capital of $5000. The new firm will manufacture and prepare stone, marble, granite, sand and gravel. Incorporators are Nils Anderson, Helge Carlson and Manfred Peterson.

James H. Rhodes Pumice, Inc., Glencoe, Ill., was recently incorporated with 10,000 shares of common stock, p.v., $10. The incorporators are Paul T. Kessler, Jr., Joseph F. Grinnell and Agnes Keine.

Rahr-Crete Machinery Co. was recently incorporated with 500 shares of capital stock, par value, $100. The company will produce concrete block and machinery for making block. The incorporators are William Rahr, Michael Brisch and Austin F. Smith.

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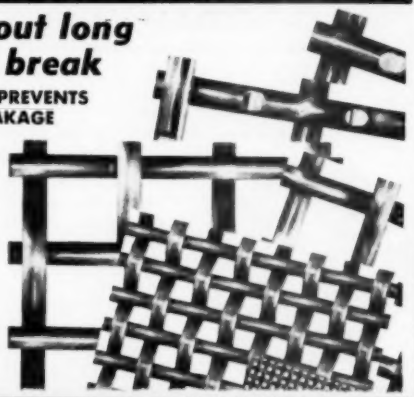

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FINANCIAL

NAZARETH CEMENT CO., Nazareth, Penn., has sold a $600,000 note, due September 1, 1960 to the Penn Mutual Life Insurance Co. of Philadelphia. Proceeds from the sale, together with other company funds, were used to retire all the outstanding cumulative preferred shares on December 15 at the call price of 105 plus accrued dividends. Preferred stockholders are offered payments of the full call price after November 15.

PENNSYLVANIA GLASS SAND CORP., Lewistown, Penn., called a special meeting of stockholders December 1 to vote on a proposed two for one split of common shares and to change the common from no-par to $1 par. This corporation currently has 321,860 shares of no-par common stock outstanding. Stockholders of record November 20 were entitled to vote at the meeting.

CONSOLIDATED ROCK PRODUCTS CO., Los Angeles, Calif., paid 2½ percent interest payment November 1 on 1st fixed and income 3s-5s, due 1962, to stockholders of record October 16, 1950.

OREGON PORTLAND CEMENT CO., Portland, Ore., reports that conversion of 5 percent preferred stock has increased the number of common shares outstanding to 138,043. Of 4000 remaining preferred shares outstanding, called for redemption December 15, 2800 shares were converted. This leaves 1200 shares to be redeemed.

CANADA CEMENT CO., LTD., Montreal, Canada, reports that 23,787 shares of $20 par cumulative redeemable preferred stock has been cancelled leaving a total of 980,558 shares outstanding.

CALAVERAS CEMENT CO., San Francisco, Calif., reports sales of $1,834,868 in the three months ended September 30, 1950, compared with $1,307,963 a year earlier. This brings the nine months sales to $4,373,813 against $3,546,746 in the 1949 nine months period.

BLUE DIAMOND CORP., Los Angeles, Calif., had net sales of $3,564,735 in the quarter ended September 30 against $3,158,272 in the like quarter of 1949. This makes the nine months total $9,675,211 against $8,765,847 in the same nine months span a year ago.

PENNSYLVANIA GLASS SAND CORP., Lewistown, Penn., reports net profits for the nine months ended September 30 as $1,032,323 contrasted to $805,884 for the like period in 1949. Share earnings were $2.84 for the same period against $2.14 in the nine months a year ago.

PENNSYLVANIA-DIXIE CEMENT CORP., New York, N. Y., reports that for the quarter ended September 30 net profits were $1,284,598 compared to $808,345 of the same period in 1949. Net sales were $7,393,574 as against $5,690,930 and share earnings $2.13 against $1.34 a year ago.

MEDUSA PORTLAND CEMENT CO., Cleveland, Ohio, has declared a regular quarterly dividend of $1 a share on capital stock, payable December 20 to holders of record December 18. This brings payment to $4 against $3 last year.

ALPHA PORTLAND CEMENT CO., Easton, Penn., has declared secondary offering of 27,000 shares of common stock by the First Boston Corp., was oversubscribed and the books closed. The shares were priced at 34¼ each.

AMERICAN ROCK WOOL CORP., Wabash, Ind., in an amendment to registration statement covering proposed offering of $5 par common stock discloses that a total of 91,583 shares will be sold, including 52,263 shares for account of company and 39,320 shares for account of selling stockholders.

PEERLESS CEMENT CORP., Detroit, Mich., for the nine month period ended September 30, 1950, reported a net profit of $893,983, as compared with a net of $768,680 for the same period in 1949. This equalled $2.88 per common share, on 310,062 shares, for the 1950 period, as against $2.48 per common share in the 1949 period.

BASIC REFRACTORIES, INC., Cleveland, Ohio, has negotiated loans totaling $2,400,000 on first mortgage installment notes from private institutions. Proceeds from the financing will be used to retire existing loans and to help finance the construction of a new plant in Nevada. Basic Refractories operates plants in Bettsville and Maple Grove, Ohio and Gabbs, Nev. for the production of granular refractories used in the steel industry.

BASIC REFRACTORIES, INC., Cleveland, Ohio, for the three months ended September 30, 1950, listed a net profit of $255,600, or $.73 per share on 350,000 capital shares, as against a net of $89,685, or $.26 per share for the same period in 1949. For the nine months ended September 30, 1950, net profits were listed at $658,157, or $1.88 per share, compared with a net of $465,407, or $1.33 per share for the corresponding period in 1949.

CONSOLIDATED CEMENT CORP., Chicago, Ill., has reported a net profit of $387,900 for the first nine months of 1950, or $3.88 per cl. A share, on 99,916 shares. This compares with a net profit of $468,600 for the corresponding period of 1949, or $4.69 per cl. A share. Net sales for the first nine months in 1950 totaled $3,408,600, as against $3,370,100 for the 1949 period.

ALBERENE STONE CORP. OF VA., Schuyler, Va., has reported a net income of $72,802 for the nine month period ended September 30, 1950, as compared with $33,190 for the preceding year. Earnings per common share for the 1950 period were $1.11 on 65,745 shares, as against $.50 per common share in the corresponding period in 1949. Net sales for the same period were $1,299,587 in 1950. This compares with net sales of $1,021,399 for the corresponding period in 1949.

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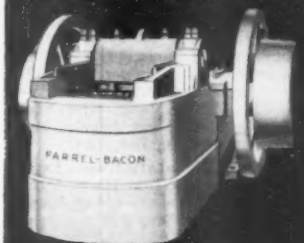

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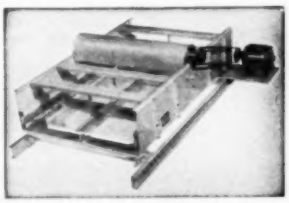

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MANUFACTURERS NEWS

Chase Bag Co., Chicago, Ill., has announced the retirement of Frank J. Danner, who has been general traffic manager for more than 25 years. A. P. Ellerbrock, assistant to Mr. Danner, has been named to succeed him.

The Lincoln Electric Co., Cleveland, Ohio, has elected W. R. Persons as vice-president in charge of sales. He advances to his new position from his former one of sales manager which he has filled since 1946. Mr. Persons joined the company in 1934, as a welding engineer.

H. K. Porter Co., Inc., Pittsburgh, Penn., has announced the formation of the Jarecki valve division, Tulsa, Okla., to handle the manufacture and sale of Jarecki valves formerly produced at the Jarecki Mfg. Co. plant in Erie, Penn. Announcement has also been made that Lawrence L. Garber has been appointed general manager of the American-Fort Pitt spring division, McKees Rocks, Penn.

Dravo Corp., Pittsburgh, Penn., has elected A. J. Morrison, manager of the shaft and tunnel department, as chairman of the firm's junior board of directors for 1951. Three new members appointed to the board are William D. Bickel, manager of the power department; Louis P. Struble, manager of the Keystone division, and William H. Collins, director of advertising.

Hewitt-Robins, Inc., New York, N. Y., announces that Chicago locations of the company have been consolidated at 402 W. Randolph St. This includes the offices and warehouses of the Hewitt Rubber, Robins Conveyors and Robins Engineers divisions. Hewitt Restfoam will continue to maintain offices in the Furniture Mart.

Alden Equipment Co., Los Angeles, Calif., has announced its formation to represent the lines formerly handled by the Snyder Engineering Corp., including Jeffrey Manufacturing Co., Columbus, Ohio; Cleveland Worm & Gear Co., Cleveland, Ohio; Farval Corp., also of Cleveland, Ohio, and Louden Machinery Co., Fairfield, Iowa.

Walsh Refractories Corp., St. Louis, Mo., announces that the name, Mullitex HB, now supplants the previous brand name, Mullitex RB, for the high burn Missouri super-duty fire brick manufactured by the company.

Stephens-Adamson Mfg. Co., Aurora, Ill., has announced its fiftieth anniversary in the production of materials handling equipment. The company began operations in a single 80- x 120-ft. building in 1901, and today occupies a 13-acre site, with branch plants located at Los Angeles, Calif., and Belleville, Ontario, Can.

Raybestos-Manhattan, Inc., Passaic, N. J., announces that Harry V. Snyder, factory manager of the Manhattan rubber division, died suddenly on December 2. He was 56 years old and had been associated with the company since 1909. He was manager of the roll covering and tank lining departments for over 25 years. He was appointed assistant factory manager in 1942 and two years later became factory manager.

Koppers Co., Inc., Pittsburgh, Penn., announces that Edward Salner has been appointed manager of the precipitator department of the metal products division. He succeeds Frank H. Linthicum, who died on December 11. Mr. Salner has been assistant manager of the precipitator department since 1947.

Air Reduction Co., Inc., New York, N. Y., has announced the appointment of Dr. E. R. Blanchard as assistant manager of the research division. He joined the company in 1946 as a physicist and technical consultant. Leigh W. Haefle, who has been with the firm since 1938, has been named assistant chief engineer of the general engineering department.

General Electric Co., Schenectady, N. Y., has announced the appointment of John W. Belanger and Nicholas M. DuChemin as general managers of the large apparatus and small apparatus divisions, respectively, of the apparatus department. Formerly, they were assistant general managers of the department. C. B. House, Jr. and Lee J. Mohler have been appointed sales managers of two newly established product line sections in the small and medium motor divisions with headquarters in Lynn, Mass.

A. P. Green Fire Brick Co., Mexico, Mo., has elected William S. Lowe as president of the company, a promotion from the position of executive vice-president which he has held since August, 1949. Mr. Lowe succeeds Robert S. Green, son of the founder, who recently resigned, but will continue as a member of the board of directors. Mr. Lowe attended Cotner College, Lincoln, Neb., for one year taking pre-law, and then entered to graduate from South Dakota College in 1931 with a B.S. in electrical engineering. He continued there for two years in graduate work and served as an instructor in mechanical engineering. During his active career he has served with the General Electric Co., SKF Industries, Inc., and from 1944 to 1949 as chairman of the board and president of the Winsted Hardware Mfg. Co., Winsted, Conn.; chairman of the executive committee, director and treasurer of the American Transformer Co., Newark, N. J.; and vice-president of the Waring Products Corp., New York, N. Y.

William S. Lowe

Wheelco Instruments Co., Chicago, Ill., has announced the appointment of Ansell & Goda, Washington, D. C., as district agency for the territory which

includes the District of Columbia, Virginia and part of Maryland. The former agents in this territory, The Phipps & Bird Co., will continue to serve as an authorized resale agency of the company.

Babcock & Wilcox Tube Co., Beaver Falls, Penn., announces that Isaac Harter, chairman of the board, has been awarded the Newcomen Medal for achievement in the field of steam, by the Newcomen Society and the Franklin Institute. This is the second time the medal has been conferred, the first being to Rear Admiral Harold G. Bowen, U.S.N., in 1944.

Joseph T. Ryerson & Son, Inc., Chicago, Ill., has announced the election of Charles L. Hardy as president of the company, taking the place of Everett D. Graf who became chairman of the executive committee, and Thomas Z. Hayward as vice-president in charge of sales; and the retirement of Robert C. Ross, vice-president in charge of operations, who served for 47 years with the company. Both Mr. Hardy and Mr. Hayward were elected directors and members of the executive committee. Mr. Hardy joined the Boston plant in 1927, serving in plant operations and sales for 18 years. In 1945 he was made manager of the Philadelphia plant and in 1949 moved to the general offices in Chicago, as assistant vice-president in procurement. He later became assistant to the president, in which capacity he served as an executive in both procurement and sales. Mr. Hayward was formerly general manager of sales for the group of 13 Ryerson steel service plants. He has spent his entire career with the company, having joined in 1917. Most of his 33 years with the firm have been spent in the sales department, including a number of executive assignments.

Charles L. Hardy

Thomas Z. Hayward

The Colorado Fuel and Iron Corp., New York, N. Y., has appointed L. A. Watts as assistant general sales manager of the Wickwire Spencer steel division. Mr. Watts is being succeeded by R. M. Wagner as manager of the pig iron and semi-finished sales department, but he will continue to direct and supervise this division.

Bucyrus-Erie Co., South Milwaukee, Wis., announces the appointment of the Southwest Machinery Co., Oklahoma City, Okla., as distributor for the firm's general purpose excavators

"HERCULES"* RED-STRAND the DEPENDABLE WIRE ROPE for TOUGH JOBS

* REG. U.S. PAT. OFF.

Experienced wire rope users have found that they can depend on "HERCULES" (Red-Strand) for the strength... toughness... durability – necessary for consistent, safe, and economical service. Our exacting standards and rigid tests insure these results.

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2. Two to seven separations simultaneously
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5. Visible separation to refusal
6. Few moving parts
7. Sturdy construction
8. Size range 4" to 200-mesh

GILSON Mechanical Testing Screen

• This machine is designed for the efficient sizing of test samples of crushed stone, gravel, slag and similar materials. It accommodates samples up to one cubic foot, making from two to seven separations simultaneously, in five minutes or less.

Smaller amounts of very fine materials may be handled efficiently and the screen used for research or other special mass separation jobs down to 100-mesh or finer.

Where exacting specifications are required the Gilson Screen eliminates guesswork—avoids errors and reduces operating delays. A controlled and truly guaranteed product is now possible with the Gilson Testing Screen. For fast accurate sizing of coarse or fines from 4" to 200-mesh specify a Gilson Testing Screen.

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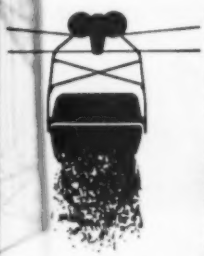
MARCY
C-P-D
Rod Mills
PRODUCE
BETTER SPECIFICATION SANDS AT LOWER COST
● MARCY Center-Peripheral-Discharge Rod Mills produce specification sands with fineness modulus variations of only 0.10 on government dam projects and in industrial sand and gravel plants. Besides improving uniformity and particle shape, MARCY Mills cost less to operate than other grinding equipment of equal capacity.
Other advantages include gradation flexibility and continuity of operation. Write for full information on MARCY C-P-D installations.
Offices in Salt Lake City, El Paso, 1775 Broadway, N. Y. C.



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by BRECO up to 500 tons per hour

Breco Ropeways are renowned throughout the world for speedy, efficient, and economical handling of residue, minerals, and backfill. Breco engineers can put at your disposal the accumulated experience of many years designing and operating materials handling equipment for some of the world's most difficult mining operations.

You are invited to visit our exhibit at the Canadian International Trade Fair — Toronto, May 28 — June 8, 1951

BRECO ROPEWAYS

British Ropeway Engineering Co. Ltd. Plantation House, Mincing Lane, London E.C. 3, England

Canadian Agents: Vulcan Iron and Engineering Limited, Winnipeg

and Hydrocranes throughout the state of Oklahoma.

The Howe Scale Co., Rutland, Vt., has appointed George A. Seaver as manager of the New York City branch and William H. Leland as manager of the Newark, N. J. branch.

Allegheny Ludlum Steel Corp., Pittsburgh, Penn., has announced a series of promotions in the sales department, including the appointments of Dr. R. A. Lincoln as manager of the sales development and engineering service department, C. R. Mitchell and R. S. Robinson as managers of stainless strip and carbon steel sales, respectively, and Frank F. Young as assistant manager of the Pittsburgh district sales office. New appointments were also made in connection with two of the plant order departments. They are as follows: C. G. Hathaway as head of the order entry division of the Brackenridge plant, succeeding N. A. Crain, who retired; J. P. Parsons as assistant manager of the order entry division; E. B. Van De Mark as manager of the Watervliet order entry division, succeeding L. D. Burr, who retired; and E. Hauprich as assistant manager. W. A. Kirkpatrick has been named as assistant to the controller and Robert Swan III as manager of costs and statistics.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has appointed Gordon F. Friauf as general material supervisor, succeeding Charles A. McCormack, who has retired after 55 years with the company. Mr. Friauf joined the firm in 1925 and has been assistant to Mr. McCormack since 1948. Until his retirement, Mr. McCormack had been general material supervisor since 1918. He started with the old E. P. Allis Co. in 1895 as a timekeeper.

Worthington Pump and Machinery Corp., Harrison, N. J., has acquired the land, buildings and equipment of National Transit Pump & Machine Co. in Oil City, Penn., which is in the process of dissolution. It is said that this plant will be utilized by the company in production of equipment related to the National Defense Program.

Link-Belt Co., Chicago, Ill., announces that Andrew K. Kolar, formerly district manager at Moline, Ill., has been appointed assistant sales manager for Pershing Road plant products, with offices in Chicago. Stuart T. Penick, heretofore district engineer at Dallas, Texas, has been transferred to Moline in the capacity of district manager, to succeed Mr. Kolar. Link-Belt Africa Ltd., the company's wholly-owned South African subsidiary, has purchased a manufacturing plant, with a separate office building, in Springs, Transvaal, for the purpose of manufacturing conveyor machinery and other equipment. John E. Peterson has been appointed managing director of the South African company, and Gene Zwerner has been appointed sales manager.

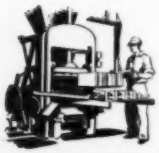
CONCRETE PRODUCTS

A SECTION OF ROCK PRODUCTS

CONCRETE UNITS · READY-MIXED CONCRETE

Concrete Industries Exposition held in Cleveland's Public Auditorium

This silo, on a Minnesota farm, is made with Duraplastic silo staves from Madison Silo Company, Detroit Lakes, Minn.; silo erected by same company.



Better for making products

Because of Duraplastic cement's air-entraining feature, a damper mix can be used. This mix is more "rubbery" and more cohesive. It holds together better and feeds easily through machines. Duraplastic has proved its superiority for silo staves, concrete pipe, brick, block, drain tile, and a host of other concrete products.

Makes better concrete products

Plants using Duraplastic report reductions in costly breakage of green products, fewer culls and throw-backs. Finished units exhibit greater resistance to passage and absorption of water. Appearance and face texture are generally improved. Edges and corners are clean cut and truer.

YET DURAPLASTIC* COSTS NO MORE

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

ATLAS®

DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT

Makes Superior Concrete Products at No Extra Cost

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"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

25 PROFIT MAKING FEATURES

The new BLAW-KNOX light-weight Hi-Boy is the only truck mixer which can give you all these advantages:

1. The lightest weight, complete, standard truck mixer.
2. Maintenance-free revolving hopper.
3. Hopper seal guaranteed for one year.
4. Single lever drum control operated from ground or walkway.
5. Single discharge control operated from ground or walkway.
6. Split-second charging through 32" unrestricted opening.
7. Complete end-to-end mixing, even of zero slump concrete.
8. Back-mixing if desired, with hopper in charging position.
9. Convenient visual inspection of batch before discharge.
10. Fast discharge without segregation, even with zero slump concrete.
11. Blade system that discharges entire batch without residue.
12. Fastest and easiest control of discharge.
13. Higher discharge—no confining chutes.
14. Easily replaceable mixing blades.
15. Grout-proof automatic water nozzle, properly located.
16. New silent, automotive transmission—the standard of comparison.
17. All metal clutches running in oil.
18. Finger-tip control for reversing drum rotation.
19. Extreme accessibility for maintenance or repair.
20. Double roller chain drum drive.
21. Clutch controlled V-belt driven water pump.
22. 2-compartment, splash-proof, tilt-proof automatic water measuring tank.
23. 2-compartment flush tank.
24. 3-position, quick-acting, stainless steel water valve.
25. Washout hose included.

Keep your units on the road . . . keep them working!

THE Revolving Hopper assures faster charging, faster discharging. A flick of the latch automatically inverts the hopper for discharge. Another flick and it is upright for charging. The Hi-Boy's exclusive Revolving Hopper ends tail gate trouble by eliminating the tail gate! It is the only rear end hopper with a SEAL GUARANTEED FOR ONE YEAR . . . the only seal that operates safely while submerged in concrete!

Get the "COMPLETE PACKAGE" of ready-mix equipment

You'll like the advantages of getting all your equipment . . . clamshell buckets, batching and charging plants and Hi-Boy Trukmixers . . . all in one shipment, backed by one responsibility, with one source for expert service, and covered by one financial arrangement. Ask your Blaw-Knox distributor to explain every benefit of the "Complete Ready-Mix Package."

BLAW-KNOX

BLAW-KNOX DIVISION OF BLAW-KNOX CO., Farmers Bank Bldg., Pittsburgh 22, Pa.
New York • Chicago • Philadelphia • Birmingham • Washington • San Francisco

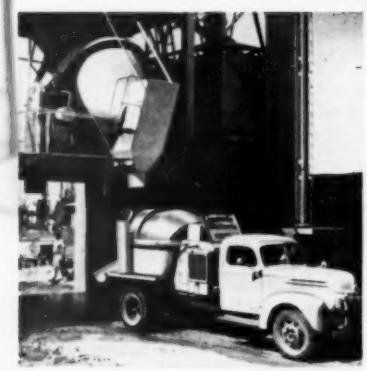
YOU SAVE 3 Ways

with Smith-Mobile LOADLIMIT models

MEET HIGHWAY WEIGHT LIMITS

with a Smith-Mobile LOADLIMIT Model. You can easily convert it to a Standard Smith-Mobile Truck Mixer or Agitator. And a Standard Model can easily be converted to a LOADLIMIT Model.

LOADLIMIT Models are available in 3, 4½, 5½ and 6½ yard sizes, with higher ratings for agitators. All carry NRMCA rating plates.



HERE'S a WINNING COMBINATION!

Smith Tilting Mixers and Smith-Mobile Agitators enable you to deliver better concrete with speed and certainty, at low cost. They have a record of achievement that has never been equaled in the industry.

1 **LOWER INITIAL COST** — By eliminating parts and units not absolutely vital to mixer operation, price of mixer is greatly reduced. A less expensive LOADLIMIT Model can be mounted on a lighter truck, resulting in a further saving in initial investment.

2 **LOWER OPERATING COSTS** — Less dead weight means bigger payloads without exceeding highway weight limits. A lightweight LOADLIMIT Model has less overall width, maneuvers more easily, travels faster. Discharge is easier since there is no closing door to open and close.

3 **LOWER MAINTENANCE COSTS** — Replacements and repairs are seldom necessary. A LOADLIMIT Model has the same sturdy construction as a Standard Smith-Mobile and carries the same guarantee. With unnecessary parts removed, there is less to maintain. The closing door is eliminated. No seal troubles.

Ask your nearby Smith Distributor to give you all the LOADLIMIT facts.

THE T. L. SMITH COMPANY
2885 N. 32nd St., Milwaukee 45, Wis., U. S. A.

SMITH MOBILE

For BIGGER and BETTER Concrete Mixers and Truck Mixers Look to SMITH

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INDUSTRY NEWS

Bomb Shelters

R. B. CONCRETE PRODUCTS CO., Bedford, Ohio, is experimenting in underground family-type bomb shelters. Paul Brelo, a partner in the firm, said that if public reaction warrants it, the company will produce the shelters on a mass-production basis. The first shelter made was buried under 2 ft. of earth on the company's property. It was constructed of 3-in. concrete, reinforced with welded mesh, and measured 8 x 6 ft. in floor space, and about 6 ft. in height. Although the shelter is not guaranteed to protect against direct hits by large-type atom bombs, Mr. Brelo stated that it would provide protection against heat, radiation and flying debris, and that it would also improve the morale of the working man to know that his wife and children have protection in their own back yards.

Concrete Study

REPRESENTATIVES of the Dutch precast concrete industry recently spent several days in leading centers in the U. S. to study American techniques in concrete production. The group was under the technical assistance program of the Economic Cooperation Administration.

Darden Joins Leftwich

R. F. LEFTWICH, designer of sintering machines and equipment for manufacturing Aglite, announces that Roy Darden Industries, Inc., Atlanta, Ga., has been appointed representative in the South for Aglite plants and equipment. Mr. Leftwich designed and supervised construction of the first Aglite plant of The Marietta Concrete Corp., Marietta, Ohio, as well as the

R. F. Leftwich, left, and Roy Darden

Aglite plant of the Lightweight Aggregate Corp., Detroit, Mich., of which Benjamin Wilk is president. Mr. Darden long has been identified with the concrete products industry. For years he was associated in the production of lightweight concrete masonry units with John Bailey of Atlanta, Ga., before he started the manufacture of concrete block plant equipment. In addition, Mr. Darden holds a long-time contract with the F and A Laboratories as the sole licensing agent for the F and A floor and roof system of concrete joist and filler block construction.

Quick-Drying Concrete

ANDREW J. HIGGINS, SR., New Orleans, La., industrialist, whose landing craft played an important role in World War II, has developed a new product, "Thermo-Con." It is a quick-drying, foaming concrete which is sprayed from a power hose. The material is a combination of cement, water and a chemical which are mixed at high agitation. Mr. Higgins stated that it is quick-drying, withstands heat and cold and is practically waterproof. Developed over a period of 29 years, Thermo-Con was first used in 1943 for the construction of several houses. Since then it has been used in several building projects including a 21-apartment building in Atlanta, Ga. Mr. Higgins then decided the product might be suitable for roads and airstrips, so ranking officers of all branches of the armed services were invited to witness a demonstration of the product. In a few hours after the concrete was sprayed in place, the 8-in. thick concrete strip was dry enough to support a truck loaded with plywood weighing over 22,000 lb. The military men seemed impressed but were non-committal. According to Mr. Higgins, his product is capable of doing the job because it isn't affected by the spillage of fuel, needs no expansion joints and can withstand temperatures up to 2300 deg. F. He added that a workable airstrip could be laid with the material in 12 hours over any terrain.

Concrete Course at Purdue

THE FORT WAYNE, IND., Purdue University Center recently conducted a five-week course in "Building with Concrete." The course was sponsored in cooperation with the Portland Cement Association and was especially designed to help engineers, sidewalk contractors, civil engineers, architects and ready-mixed producers. B. R. Petrie, district structural engineer for P.C.A., and Homer B. Neiz, field representative, were the instructors. Topics covered in the course included concrete masonry; mixing, placing and finishing concrete; and building with architectural concrete. The course was offered as an adult education class and was open to anyone on a non-credit basis.

RUSSELLVILLE CONCRETE PRODUCTS Co., Russellville, Ky., has built a concrete block plant in Hopkinsville, Ky. Production was scheduled to start by the first of the year. Brent Thurmond is owner of the company.

MODERN PRECASTING CONSTRUCTION Co., Hialeah, Fla., has developed a picket fence which resembles wood in appearance, but is made from precast concrete. The firm reports that patents have been applied for and that the F.H.A. has approved the new-type fence.

DANVILLE CONCRETE PRODUCTS CO., INC., Danville, Ky., recently held a public auction sale to dispose of its plant and equipment. The corporation is being dissolved.

BISMARCK READY-MIX CONCRETE Co., Bismarck, N. D., a newly-organized corporation, is building a ready-mixed concrete plant which is expected to be in operation by early spring. The plant is to be entirely enclosed and will be kept heated during the winter months to permit batching temperature-controlled concrete at all times. Plant facilities will include a 120-cu. yd. bulk-cement storage silo.

MCNAMEE READY MIXED CONCRETE Co., which operates plants in Fairborn and Xenia, Ohio, has announced that it is expanding operations by the purchase of Hurst Sand and Gravel Co. and additional real estate near Fairborn. The Fairborn plant will be moved to the Hurst location. In addition to handling ready-mixed concrete, the company will now produce washed sand and gravel. F. McNamee is owner and manager of the company.

SOUTHEASTERN CONCRETE PRODUCTS Co., Cayce, S. C., is building a $150,000 concrete plant at Aiken, S. C., as announced recently by W. R. Carson, company president. The plant will produce ready-mixed concrete and concrete block.

UNITED CONCRETE PIPE CORP., Baldwin Park, Calif., has purchased 50 to 60 acres of land at Moses Lake, Wash., for the purpose of erecting a concrete pipe manufacturing plant. Cost of the project has been estimated at approximately $1,000,000.

UNIVERSAL CONCRETE PIPE Co., Columbus, Ohio, recently announced plans to build a plant at Paducah, Ky., for the manufacture of concrete block and pipe. Construction is expected to be completed within four months.

PENNY READY MIX CONCRETE Co., Emporia, Kan., has reported rapid progress in its concrete business since the opening of the plant in June, 1950. M. N. Penny, who also operates a plant in Lawrence, Kan., is the founder of the company, and his son, Charles, is manager. Approximately 70 cu. yd. of concrete are being produced daily. Plant facilities include three 50-ft. silos for aggregate storage, a 300-ton capacity, 4-compartment, steel bin for cement storage and a 56-cu. ft. mixer.

NO-TURN shuttle haul . .

Dumptors®

On every haul cycle, Koehring fast-shuttling Dumptors eliminate slow turns — at the loading unit, at the dumping point, on sharp, "zig-zag" grades. They gain more productive haul time, because Koehring constant-mesh transmission gives the same 3 fast speeds forward and reverse. Here's how much no-turn shuttle operation can increase your production:

SAVE TURN TIME GAIN HAUL TIME

By eliminating only 2 turns on a 1,000' haul, time studies prove that Dumptors can save 30 seconds every round trip, and increase hourly yardage output over 10% per unit. What's more — fast, easy spotting and 1-second gravity dump keep production high.

Remember, too — top hauling efficiency also means increased shovel output. For *double profit protection*, team fast-shuttling Dumptors with Koehring heavy-duty excavators. Four sizes: ½-yd., ¾-yd., 1½-yd., and 2½-yd.

KOEHRING COMPANY
MILWAUKEE 16, WISCONSIN
Subsidiaries: JOHNSON • PARSONS • LEWIS-BRIZ

It will pay you to get complete facts from your Koehring distributor. Call him NOW.

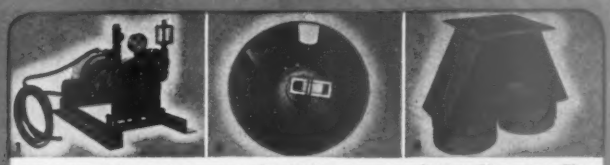
IN OPEN PITS OR UNDERGROUND

In confined underground operation, Dumpter spots fast, close to shovel . . . no need to turn. Shovel operator has short swing cycle, a big, easy-to-hit 8' x 8' target, for loading Dumpter over either end or sides.

At dump there's no slow jockeying around. Dumpter drives up, body forward; operator hits body release lever; gravity instantly dumps the 6-yd. payload in 1 second . . . Dumpter heads back without turning.

On no-turn shuttle haul, from underground to surface, loaded Dumpter leaves narrow tunnel in same position as it entered . . . travels same speeds forward and reverse . . . easily climbs 24% grades fully loaded.

INCREASE BATCH PLANT PROFITS *with Johnson accessories*



Rotary Vane Compressor gives 7 cu. ft. air pressure per min. cement aeration. 15-lb.-limit relief valve.

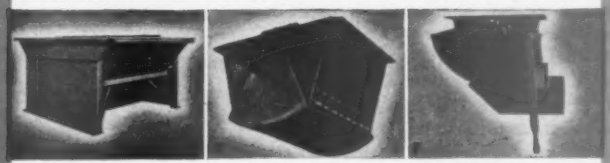
Aeration Fittings properly spaced in Johnson bins and silos keep cement free flowing.

2-Way Elevator Discharge Valve, a flop-type chute, directs flow of cement to the storage tank.

Pivoted Distributor feeds aggregates to bin sections. Positions and locks by ground control wheel.

Bin Signals accurately register high and low levels in cement or aggregate. Dust-proof.

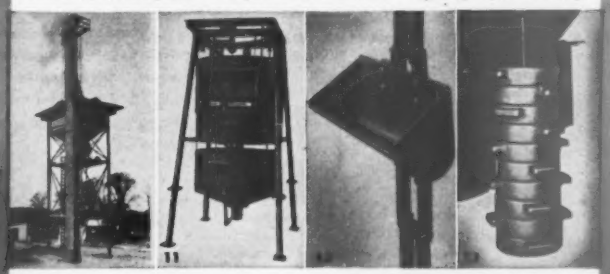
Rotary Plug Valve accurately controls cement flow. Plug operates freely in self-aligning bearings.



Receiving Hopper 30 and 50-bbl. sizes, feeds bulk cement to elevator. All-welded, weather-proof.

Aggregate Fill Valves single clam, radial type for jam-proof closing. Hydraulic pressure lubrication.

Tunnel Gate for stockpile reclamation. Single radial clam. Hinged spout opens, locks securely.



Safety Cage of 28" steel, welded to casing, can be furnished with all Johnson elevators.

Water Weigh Batchers, semi- or full-automatic types. 120 and 240-gal. sizes available.

Elevator Buckets in many sizes for aggregates, and cement. **Steel Chain** has carburized knuckles.

Batcher Test Weights in sets of ten, 50-lb. calibrated units, for checking batcher accuracy.

Mail to **C. S. JOHNSON COMPANY**
CHAMPAIGN, ILLINOIS
(Koehring Subsidiary)

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READY FOR *immediate* SHIPMENT

BUTLER
PLANT ACCESSORIES TO SAVE CRITICAL MANPOWER!

Bring your plant to the highest possible production at the lowest cost for labor. These BUTLER plant Accessories for the Roadbuilder, the Ready Mixed Concrete and the Concrete Products operator are designed by engineers who have had many years of close association with materials handling in concrete production.

Install them now. They'll pay you a handsome profit in these days of labor shortages.

BUTLER BIN CO. WAUKESHA, WIS.

Bin gates *do* take a beating. Probably no other spot in a plant is subjected to such constant and heavy wear. Keep *extra* gates on hand in case of trouble. It will pay!

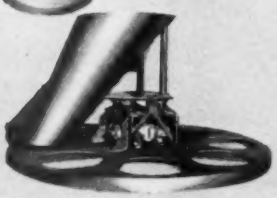
Butler offers every type of gate for every material.

BUTLER POSITIVE BIN LEVEL INDICATORS

Virtually indestructible, highly sensitive, low in cost. Sealed against dust or moisture. Works with virtually any bin-stored material. Complete information on request.

BUTLER CEMENT AERATOR

Most compact equipment made. No other offers compressor, tank, motor, moisture trap and all controls in one package. Takes no more space than a standing man. Dual pressure take-off permits use of air for other applications, too.



PUSH-BUTTON TURNHEAD

Like an automatic elevator, Turnhead stops at any station, from one to eight, at command of proper button. Great time and labor saver in changing aggregate bin compartments.

AIR JETS

Activated by BUTLER Cement Aerator, BUTLER Air Jets are quick-acting, trouble-free, positive and durable. Easy to install.

CONCRETE HOPPERS

Saves costly truck waiting time. Truck loads hopper and is off and away. Buggies or barrows unload Hopper in meantime. Easily transported.

STEAM JETS

Powerful and instant in action BUTLER Steam Jets are virtually a "must" for good operation in cold weather.

BUTLER BIN CO.

989 Blackstone Ave. Waukesha, Wis.

The large arena of Cleveland's Public Auditorium was filled with machinery exhibits

MASONRY CONVENTION ANTICIPATES OPERATING PROBLEMS TO BE FACED

Quality of product, technical problems, sales promotion, aggregates, labor, new competition, pensions considered at Cleveland meeting. Large attendance patronizes biggest machinery exposition

THE THIRTY-FIRST ANNUAL convention of the National Concrete Masonry Association was held, January 22-25, 1951, at the Cleveland Auditorium, Cleveland, Ohio. It was one of the most successful meetings ever held by the association, and being an exhibit year the meeting attracted visitors from all parts of the United States, Alaska and Canada. Over 3100 registered and the exhibit hall was crowded each minute with those interested in the latest ideas relating to concrete masonry production and in the many other segments of this industry. The Cleveland exhibit hall, one of the largest in the country, was overloaded with timely exhibits and several had to use the basement to display their products and services.

The general program called for meetings in the morning, leaving the afternoons open for the visitors to attend the exhibits. However, in a few instances producers of aggregates, especially lightweight materials, held informal sessions on two afternoon periods.

Among the subjects discussed related to merchandising of concrete masonry products and homes built of prefabricated panels using the principles of prestressed concrete. The education of student architects in the advantages and uses of concrete block was another theme that was discussed with a wide general appeal. A third subject of wide interest related to present day trends in pension plans and of their administration.

The exhibits included practically all types and kinds of the 1951 models of automatic block machines with a few new such machines never exhibited before. The manufacturers of ready-mixed concrete trucks and concrete mixing bodies were there enmass, with practically every large manufacturer in the United States having one or more of its latest units on exhibition. Those manufacturers in all fields serving the concrete masonry industry and who we contacted expressed complete satisfaction in the economic aspects, sales and sales leads that sourced from the 1951 convention. That some manufacturers know full well the sales and promotional advantages of the National Concrete Masonry Association's exhibitions was evidenced from one exhibitor who was reported to have had 62 of his personnel on the registration lists.

The first day of the convention opened with president Glenn C. Barnes as presiding officer, at which time the invocation was delivered. Then, as usual, followed the reports of the treasurer, Carroll Strohm, Jr. and of the executive secretary, E. W. Dienhart. The reports of the director of engineering, director of promotion, and the nominating committee were made by R. E. Copeland, W. P. Markert and H. E. Buchholz, respectively.

Officers

Horace W. Bush, Multiplex Concrete Co., East Orange, N. J., was elected president of the National Concrete Masonry Association.

The vice-presidents elected were in the order as follows: A. G. Streblow, Basalt Rock Co., Napa, Calif.; Otto Buehner, Otto Buehner & Co., Salt Lake City, Utah; and Jay C. Ehle, Cleveland Builders' Supply Co., Cleveland, Ohio. Carroll Strohm, Jr., Nashville Breeko Block & Tile Co., Nashville, Tenn., was re-elected secretary-treasurer.

Three new directors were elected as follows: William Ireland, Atlanta Ag-

Two Kansas Citians get together: Les W. Hayes, left, with C. E. Swanson

R. E. Weaver and Walter E. Spatz of Lincoln Concrete Products, Lincoln, Ill.

Otto Ladwig of Milwaukee, Wis., left, with Frank F. Erdman, also of Milwaukee

gregates Co., Atlanta, Ga.; R. I. Lampus, Springdale, Penn.; and S. Carl Smithwick, Smithwick Concrete Products, Portland, Ore.

Retiring directors were: Austin Crabbs, Austin Crabbs, Inc., Davenport, Iowa; W. Chester Smith, The Cooksville Co., Ltd., Toronto, Ont., Canada; and L. E. Schwalbe, Economy Block Co., Wauwatosa, Wis.

E. W. Dienhart is executive secretary of N.C.M.A. with headquarters in Chicago. R. E. Copeland is director of engineering; Evelyn J. Bouet is assistant secretary; W. P. Markert, director of promotion; and C. J. French, assistant engineer.

Other directors and officers not previously mentioned are as follows: Philip Paolella, Plasticrete Corp., Hamden, Conn.; Robert Anderson, Crown Sidewalk & Block Co., Minneapolis, Minn.; David Warsaw, Hay-Con Tile Co., Detroit, Mich.; Lewis Lloyd, Alatex Concrete Products, Inc., New Orleans, La.; Sam Paturzo, V. Paturzo, Bro. & Son, Inc., Baltimore, Md.; Herbert Geist, Geist Coal & Supply Co., Cleveland, Ohio; Edmund H. Brooke, National Brick & Supply Co., Terra Cotta (Washington), D. C.; M. E. Rinker, Rinker Materials Co., West Palm Beach, Fla.; John P. Sheehan, The Atlas Lime Co., El Paso, Texas.

Past presidents and ex-officio directors are as follows: Benjamin Wilk, Standard Building Products Co., Detroit, Mich.; George H. Krier, Nailable Cinder Block Co., Brooklyn N. Y.; Harve H. Kilmer, Iowa Concrete Block & Material Co., Des Moines, Iowa; Roy N. McCandless, Turner Gravel Co., San Antonio, Texas; John S. Chase, Chase Building Products, Fort Worth, Texas; John L. Strandberg, Concrete Building Units Co., Kansas City, Mo.; Walter J. Manhardt, Best Block Co., Milwaukee, Wis.; Fred W. Reinhold, Anchor Concrete Products, Buffalo, N. Y.; Deane R. Lynde, Cinder Concrete Products, Inc., Denver, Colo.; Henry E. Buchholz, Illinois Brick Co., Franklin Park, Ill.; George W. Katterjohn, Katterjohn Concrete Products, Paducah, Ky.; Harold L. Spaight, Cedar Rapids Block Co., Cedar Rapids, Iowa; and Glenn C. Barnes, Barnes & Cone, Inc., Syracuse, N. Y.

The annual banquet was held at 7:30 p.m. on Thursday evening in the Rainbow Room of Hotel Carter. Following an excellent dinner there was a floor show and dancing until midnight.

President's Address

President Glenn G. Barnes, in his presidential address calling the convention to order, stressed particularly the competitive situation confronting the concrete masonry industry and the need for intensified cooperative effort to meet the challenge. He also touched upon the coming difficulties to continued operation as the nation mobilizes for war and the association's new responsibilities as a result.

The industry's main competition is coming from other materials according to Mr. Barnes. The plywood and steel industries, for example, are making sheet sections that are easily erected and eliminate a great deal of labor on the job by building mechanics. Glass walls are another competitor and, in Mr. Barnes' opinion, the development of cored clay block which have lightness, cheapness and many of the other advantages of concrete masonry units will present stiff competition.

One form of clay block is made from an expanded clay which is mixed as a slip and uses no cement. Block machines are used to shape the units, after which they are burned. These units are very cheap and suffer, in comparison with concrete block, only in color. Because there is plenty of money behind this development, Mr. Barnes said that there will be a need for the maximum cooperative effort among block manufacturers in the industry. Research must be accelerated in order to correct the faults of concrete masonry construction, he said, and because more rigid requirements may well be forced upon the industry.

Touching upon the outlook for business, Mr. Barnes said that normally the volume of business would be enormous but that the war and government controls have drastically changed the picture. It is anticipated that labor will be siphoned off and that slowdowns will occur in certain areas. While some plants will be forced to close down, others favorably located with respect to government-approved building will probably experience the most prosperous times in their history. While curtailed financing will slow normal housing, funds are expected to be available in defense areas.

It is Mr. Barnes' opinion that the availability of labor may be the determining factor as to the survival and prosperity of the industry. On the credit side, he said that operating difficulties to come will result in much improved efficiency in order to survive. Since the government will look to associations for representation of their industries, he said that the N.C.M.A. will work closely with the various bureaus for the best possible relations.

Commenting upon sales effort, he mentioned the association's visual aid program whereby architectural drawings featuring concrete masonry construction are being made available to architectural schools. It is estimated that 80 percent of the use of concrete masonry for structures channels through architects, and there are 2500 new graduates each year.

He urged that emphasis be directed on an accelerating scale toward the improvement of quality of product and the correction of defects, and he stressed the need for an enlarged membership in order to provide the funds necessary for an increased program. In conclusion, he said that 54 full members were added since January 1, 1950, and 12 associate members.

Executive Secretary's Report

Following the report of treasurer Carroll Strohm, Jr., which showed the

Mr. and Mrs. Ross Head of Hamilton, Ontario, Canada, take a tour of the exhibits

Gilbert E. Olson, Builders Supply Corp., Phoenix, Ariz., takes a breather in Rock Products booth

The Freedman brothers, Jack and Louis, of Massachusetts Cement Block Co., Medford

association to be in excellent financial condition, executive secretary E. W. Dienhart gave his annual report.

In his opening remarks, Mr. Dienhart mentioned the extent to which the association staff had been enlarged to enable keeping pace with expanded activities. Because the industry depends largely upon merchandising, the main emphasis has been in increasing promotional efforts. The staff now has four men and four girls, the latest acquisition being Jack French as assistant to director of engineering R. E. Copeland.

Mr. Dienhart touched upon the association's activities in relationship to government agencies, which have been time-consuming, and cooperative work being done with the Producers' Council and other associations and agencies.

Engineering Director's Report

R. E. Copeland, director of engineering, in his annual report, summed up the technical developments and progress in research for the past year. He was pleased that many individual companies on their own have pioneered original developments that will add much to technical knowledge and progress in marketing. He mentioned how one producer in Oklahoma City, Okla., developed a new system of curing, utilizing high pressure steam and then application of a vacuum to extract moisture from the units. Another development has been the application of prestressing in making structural members of masonry units.

He called attention to the manufacture of highway bridges and long-span roof decks of prestressed concrete masonry in the Nashville, Tenn., area and the first full-scale application, in Kansas City, Mo., of the milk of lime process to cinders for the elimination of staining. Other new developments mentioned were the structural system of large panels assembled from masonry units in California, the establishment of new plants for the manufacture of lightweight aggregates by sintering, and the practice of drying units after curing to be followed by the application of water-proofing in California. Masonry unit floor systems constitute a large potential market and, Mr. Copeland said, substantial progress is being made toward its development.

The N.C.M.A. research project on curing at the University of Wisconsin has largely been completed and the results are being studied preparatory to issuance of a report. Rate of drying of units stored under cover is being studied, including the effects of different aggregates used, climatic conditions and various methods of piling. These studies are being made currently at Richmond, Va., Birmingham, Ala., and Cleveland, Ohio. Eight technical reports were released in 1950, covering lightweight aggregates, magnesium pallets, painting of walls, fire resistance tests and other timely subjects.

Mr. Copeland outlined his activities on committees of the various technical societies having to do with writing specifications, and discussed the association's participation in the development of building codes.

He expressed his disappointment at the poor participation in the accident prevention program which, he said, can result in reduced accidents and lower insurance rates. The report for the past year will soon be released.

According to requests for information made to the association, there is a growing interest in structural design and a trend toward thinking in terms of higher and heavier walls.

The research program for 1951 contemplates a continuation of the kinds of work carried forward in 1950. Studies will be made of sound transmission through painted partition walls; tests of reinforced concrete masonry will be started and studies of mixing time will be made.

Director of Promotion's Report

Promotion has been emphasized a great deal this past year and director of promotion W. P. Markert had much to report in accomplishment. The long range program of promotion and publicity is well on its way. Some 15,000 architects are being reached with the message of concrete masonry construction through representation in Sweets File Architectural. This year, four pages will be carried, giving specifications for walls, construction details, descriptions of concrete masonry units, examples of wall patterns and other valuable information.

Through technical bulletins of the Producers Council, some 10,000 architects are being reached. The response in the form of requests by architects for literature as a result of these presentations has been excellent. The visual aid program conducted in collaboration with the Producers Council reaches an audience of 13,000 students and 1200 professors in architectural schools. Thus far, the association has supplied 13 slides to show students the applications of concrete masonry.

Specialized bulletins covering construction of schools, churches and residences have been issued thus far to the membership, to be used as selling tools, and two more in the series will be issued in 1951. One will cover basement construction and the other will feature institutions.

Under the program for supplying plan services in the form of booklets to architects, some 19,000 copies have been distributed so far. Availability of these plan books is to be widely advertised. New features are to be added to the *N.C.M.A. Pictorial* which features outstanding jobs of concrete masonry construction. Mr. Markert urged the membership to submit more news and illustrations for use in the publication. He concluded by stating the function of advertising to be to keep the industry's production oversold during times when it is oversold.

Local Associations

Following presentation of the annual reports of the staff, representatives of local, state and regional concrete masonry associations were called

Photographed in the exhibit area are, left to right, Mr. and Mrs. Joseph R. Belot, Belot Concrete Block Co., Tiltonsville, Ohio, Roy Darden, Roy Darden Industries, Inc., Atlanta, Ga., and Mr. and Mrs. Lewis Lloyd, Alatex Construction Service, Inc., New Orleans, La.

upon to describe activities of these various groups in their respective territories.

Robert W. Baldrige, secretary of the Concrete Block Association of Allegheny county, Penn., reported a well-diversified program of activities. Among the principal ones are the handling of labor negotiations, conducting of meetings with architects and builders and consistent emphasis on the improvement of quality of product by the members. Output of the industry in Allegheny county has been increased from 7,000,000 units in 1940 to 19,000,000 in 1950.

The association sits in on labor trade council meetings and advertises in newspapers. It plans to have model houses of concrete masonry construction built and demonstrates the industry's products at the various home shows. Representatives of the association have taken on the job of trouble shooting.

The group works closely with government bodies and has found that local offices of federal agencies have great influence locally and independently of Washington. Summer meetings are held and one meeting each year is planned to include the wives. There are 14 members and seven lumber dealers in the organization.

C. A. Sirrine, executive secretary, Concrete Products Association of Detroit, read a prepared paper on the value of organized group effort and touching upon the problems confronting the industry.

E. L. Dooley reported activities of the Columbus Concrete Block Association. Among services are the working on local building codes, a regular testing service for members and publicity through the newspapers, advertising, signboards and exhibits. A house plan service is provided. There are ten members.

Earl W. Peterson reported for the organization of Nebraska producers which was formed four years ago. The first job was to get concrete masonry written into the specifications. Statewide advertising is carried in the farm journals and P.C.A. materials are the foundation for the advertising. Each year, a permanent exhibit is on display at the Nebraska state fair. Monthly meetings are held and outside speakers are scheduled in addition to informal discussion. Some 85 percent of the production in the state is represented in the membership. A requisite to membership is that producers meet A.S.T.M. strength and absorption standards and semi-annual reports are filed to check on compliance. There are nine members and 14 associate members.

Merrill Allen, in his report for the Concrete Products Manufacturers Association of South Dakota, said that there were only six concerns in the state prior to World War II. Since that time, 40 more plants have been built and there are 20 concrete masonry members in the association. Principal objectives are to improve quality, to attain greater product acceptance, research, and to gain greater recognition in the various building codes. Total membership is 38 including ready-mixed concrete producers. Fees include a $25 admission charge, $10 annual dues, and a charge of 25 cents per thousand units when there is need for additional revenue.

A 2-day meeting is held annually and the association sponsors scholarships in two recognized schools. These students, in civil engineering, report their work to the association.

Harold C. Lutes, Layrite Concrete Products Co., Spokane, Wash., told of the activities of the Concrete Products Association of Washington, of which he is president. This association has headquarters in Seattle, with Cotton Howard its engineering director, and the office looks after the interests of both the Concrete Masonry Association and concrete pipe manufacturers as well.

Charles E. Ward, Utah-Idaho Concrete Pipe Co., Salt Lake City, Utah, said the Inter-mountain Block Producers Association had nine members and nine plants in an area covering four states which had a population of about a million people.

A. D. Wylie, Economy Fuel Co., Hamilton, Ont., Canada, spoke briefly of the National Concrete Products Association (Canada) which is now two years old. He said all the provinces in Canada were represented except Newfoundland.

Harry N. Sorenson, Waylite Concrete Masonry Co., Racine, Wis., outlined the history of the Wisconsin association. George A. Meihaus, Texcrete Co., Fort Worth, Texas, represented the Texas group and R. P. Yager, Columbia Machine Works, Vancouver, Wash., represented the Los Angeles, Calif., group.

Tuesday Sessions

The convention proceedings for the second day were under the direction of Philip Paolella, Plasticrete Corp., Hamden, Conn. Mr. Paolella is also chairman of the Publication and Publicity Committee.

The chairman next very briefly outlined the job the N.C.M.A. was doing that would be helpful to the district associations.

The first speaker on the program was Herbert J. Vincent, Cinder Block, Inc., Detroit, Mich., who gave the benefits of his 25 years of observations and experiences in the marketing of concrete masonry units in the Detroit area. Mr. Vincent is sales manager of his company and he said the first requirement in building up a prosperous business was to have a dependable product and he emphasized this by pointing out that bad news travels fast. The second consideration was to know your products and to believe in them. The speaker also pointed out as a third consideration that the salesman must assume responsibility in his district for all uses of concrete masonry, and should know his customers by name and know their needs as well.

The speaker's fourth point was his belief that salesmen should know their

F. R. Zaugg, Concrete Masonry Units Co., Tacoma, Wash.

markets and should explore the less obvious uses of their products. Continuous education of architects and contractors was important as new products and new methods were developed and the concrete masonry salesman should be able to overcome prejudice and to alter poor opinions to good opinions. He felt that one should know his competitor and his contributions to the industry.

As a fifth point, Mr. Vincent felt that a salesman should know and deal with facts and not indulge in self-deception, particularly with other types of building materials, such as clay products and, above all, not distort facts.

The speaker felt that too much business tends to lull one into a sense of security and his sixth point was "to get the business."

The closing paragraphs of his sales talk stemmed from his belief that salesmen should be loyal and cooperative, both with personnel and products. By such cooperation the company then could present a solid front, both for the industry and the individual company.

This, he said, was often a test of character, which pays off in the long run.

The second speaker on the program was Prof. D. K. Sargent, Syracuse University, Syracuse, N. Y., who spoke on "The Visual Aid Program of the Association of Collegiate Schools of Architecture."

The speaker told his audience of the program whereby slides for picture projection were being used in architectural schools and colleges in an effort to educate new students in the types and uses of concrete masonry construction units. He said that there were 70 schools of architecture in the United States that had an enrollment of about 10,000 students and that about seven hours per week for one-half year was devoted to classroom work relating to concrete products.

The speaker said most of these boys

Frank H. Smikel of South Bend, Ind., gets serious about a piece of equipment

Other officers or former officers included, left to right, A. G. Streblow, Basalt Rock Co., Napa, Calif.; W. Chester Smith, The Cooksville Co., Ltd., Toronto, Ont., Canada; E. W. Dienhart, executive secretary of N.C.M.A.; and John P. Sheehan, Atlas Building Products Co., El Paso, Texas

came to college without even knowing what a concrete block looked like, so it was necessary to start from scratch and that slides were the best approach so far developed. He pointed out that motion pictures or sound pictures were not desirable as they did not permit classroom discussion.

Professor Sargent said the place to really sell concrete masonry construction was in the classroom, and the next best was not the architect's front office but the draftsman's in the back room, because these junior engineers made the first decisions, and once they were made the chief architect did not often change them.

Evidently some six sponsors and producers have supplied most of the slides, and he urged others to do their part. He said the colleges wanted no historical exhibits, meaning thereby that when a slide representing an old out-moded type of block or its use was sent in, the sponsor of such a slide should request its withdrawal.

The interesting talk was illustrated by typical slides used in architectural classroom work. The speaker also said that the slides used so far were made in Syracuse, N. Y., and were made at cost to the producer.

Selling Masonry Homes

The third speaker was Gustaf Blomberg, sales representative of Basalt Rock Co., Inc., Sacramento, Calif.

The speaker gave a very interesting account of how his company sold 2000 concrete masonry homes in two years. This was from the fall of 1948 to the fall of 1950.

He said his market was in the Sacramento Valley area and was served mainly by the large plant at Stockton. (See Sept., 1947, issue of ROCK PRODUCTS and CONCRETE PRODUCTS for a description of this outstanding plant of the West.)

Prior to the development of this market there was considerable resistance to concrete masonry homes because most carpenters graduated into contractors and therefore looked on anything but frame construction with skepticism. Bricklayers, he said, felt it below their dignity to lay concrete block. To offset this set of conditions, his company designed and built a model concrete home and called it the "Pioneer."

The climate is such that no furring or plaster was needed and the pumice block for the most part were exposed masonry suitably painted. The adoption of the name "Pioneer" for a model home is just one phase of a flare for the new and unique that is possessed by Basalt Rock Co., and this was developed to such an extent that thousands inspected the new home.

The next important step was to build 146 homes, and it was publicized so successfully that all these homes were sold on the "opening day" in four hours.

Prospective buyers who had previously registered with Basalt Rock Co., as wanting to buy one of the 146 new homes stood in line all night—some even were in line for two solid days and brought along sleeping bags and food. Every hour, over a loud speaker, the roll was called and if a buyer did not respond he lost his place in the selling line. So on the day of the sale all the houses were sold almost instantly.

A second housing project involving 181 houses was developed in a similar manner and again buyers went through the line-standing ordeal for 24 to 48 hours in advance. The speaker said this program is still being carried out and soon a project involving 252 houses will be sold.

Soon after the "Pioneer" home was built, the response to sales appeals was so emphatic that no difficulty was had in getting FPHA approval for exposed concrete masonry.

The speaker showed many slides in color of some of the houses built and these gave the audience an idea of how quickly they could be built. In many cases the Strestcrete panels as developed by Basalt Rock Co., were used.

By means of this technique a bungalow (shed or flat-roofed types) could be ready for the carpenters seven hours after starting. He said the Stockton plant served a radius of about 200 miles.

Merchandising Programs

C. D. Franks, vice-president for promotion, Portland Cement Association, Chicago, Ill., spoke on "It is Sound Policy to Maintain a Continuous Merchandising Program Through Good Times and Bad." A sound policy does not mean running ads when business is slack, then stopping when demand approaches the supply. Rather, Mr. Franks said, it is a long range program, a "look into the future." One of the most difficult things to establish is an effective advertising program when a seller's market prevails, he contended.

There are two phases in a long range program: advertising efforts directed towards immediate business selling, and institutional advertising. The speaker defined institutional advertising as that which is not primarily for selling purposes but which has the goal of gaining good will of prospective customers or the public.

More than 50 percent of Portland Cement Association's advertising is directed at masonry markets such as farm, consumer, industrial, Mr. Franks said. These ads can be used and are used to tie in with local advertising campaigns. Other aspects of the association's efforts are the programs of promoting quality concrete through producer meetings, persuading engineering schools to teach more on the subject of proper making and use of quality concrete, creating new acceptances for concrete, promoting bond issues, and improving relations with producers and consumers. None of these programs can be let drop in good times, Mr. Franks pointed out.

Mr. Franks detailed the four major steps in developing a merchandising program. First, analyze the market and determine what should be stressed in the advertising. Second, set up a long range merchandising program, which could involve model homes, displays, plan service, etc. Third, keep any program flexible, so that both "market insurance" advertising and immediate needs of business advertising can be balanced. And fourth, stick to the program set up, in good as well as in bad times.

The biggest competition in building is not among the various materials used, but rather with cars, vacations and other consumer expenditures. The speaker mentioned this to direct the producers' efforts towards advertising the lure of a home to the public, instead of limiting efforts to the promotion of specific materials.

Salesmanship

A discussion on "What Makes Star Salesmen Tick?" was given by W. S. Crean, Lacy Sales Institute, Newton Centre, Mass. He contended that we shouldn't sell the civilian economy short in these confusing times since that is what has to be saved. Since there will be fewer men available to do selling they will have to do a more effective job.

Mr. Crean advised salesmen to learn all about their products and processes. Though this is self-evident, many do not follow this, he said. Until a salesman gains confidence in his selling ability though, even this knowledge will not make him successful. Thus there are three stages in learning to be a star salesman, Mr. Crean stated. First, learn the field. Second, learn the psychology of selling. This will enable selling better and faster and involves the use of selling aids, visual aids, human interest stories, and words and phrases coming from your own personality and experiences to cover the situation. A canned sales talk should be avoided as lacking much interest and not necessarily fitting an individual's situation. However, he added, a canned sales talk is better than none at all.

The third stage is gaining skill in making interviews. An interview should be timed according to the salesman's voice, Mr. Crean stated. If his voice is harsh, the sales talk should be as short as possible. Skill can also be developed in selling the prospect the way he wants to be sold. Mimic the prospect, according to Mr. Crean: if he wants to be sold quickly, sell him quickly. Sense his mood and close the sale when he appears ready. Above all, Mr. Crean said, the salesman should control his nerves and keep from interfering with a good close. Enthusiasm for the salesman's product can also be contagious. In the same vein, getting people to like you as a salesman will help your product to be liked, Mr. Crean said.

Salesmen fall into three groups, he continued. There is service selling. A good example is the cigar stand salesman who merely handles the merchandise, since all the buyer's decisions were made. Next, there is the negotiation salesman, who makes some of the decisions of the sale, though the buyer has made most. An example is a men's suit salesman. The third type is the rarest of all—the creative salesman. This man has to lead a prospect into a sale by making all decisions himself. Only two requirements are necessary: the prospect must have a need for something, and he must have money to pay for it.

Mr. Crean listed three decisions inherent in a sale. These are the approach, demonstration, and close. The organization of a salesman's sales story is a very important part, he pointed out. A research worker knows a lot about a product, but Mr. Crean's contention was that one couldn't sell very effectively because of the lack of sales talk organization.

In concluding Mr. Crean advised the audience to start sales training programs in their own organizations, teaching salesmen the three basic

R. I. Lampus, Springdale, Penn., a new director of N.C.M.A.

S. Carl Smithwick, Smithwick Concrete Products, Portland, Ore., another new director of the association

George Katterjohn, Paducah, Ky., left, and Cloyd Fellabaum, National Cement Products Co., Toledo, Ohio

points of selling. Mr. Paolella in his concluding remarks of the session remarked that he understood Basalt Rock Co. does reverse selling, that is, it builds model homes, then gets the public to go to architects and specify concrete masonry.

Sintering Methods

The third session on Wednesday was devoted to technical problems. R. A. Utiger, chairman of the technical problems committee, presided. The first problem discussed was that of sintering. This was covered by Reed W. Hyde, president, Sintering Machinery Corp., Netcong, N. J., in his talk "Progress in the Manufacture of Lightweight Aggregates by the Sintering Process." He defined sinter as a lightweight cellular aggregate made from clay, fly ash, etc. It is an agglomerating process and not necessarily a bloating process. A molten state is produced for a few seconds, in which time the material becomes cellular. It is then immediately chilled.

The process was developed in 1905 for treating sulfide ores, according to Mr. Hyde, to burn out the sulfur and convert the fine material into an agglomerated cake suitable for further processing for metal. The first method utilized air blowing upward through the ore body. This was not successful since the fines were blown away, so a down draft was next used. This aids in holding the particles together for agglomeration.

The speaker outlined the manufacture of sinter. Clay or shale is mixed with 6-8 percent coal. Enough water is added to cause slight adhesion but not compaction. This amounts to about 5-10 percent with hard shale, 15-20 percent with clay. The combination is mixed thoroughly in a pug mill. Preparation of the charge is one of the most important steps.

The mixed charge is spread over a grate and ignited, followed by the suction of air through it to effect combustion through the entire charge. With some raw materials, particularly very fine particles, extruded pellets work the best, Mr. Hyde stated. The sinter cake is then cooled, crushed and graded. Aggregate sinter cools more slowly than metallic sinter, so cooling by water spray is oftentimes employed.

About 90 percent of all clays and shales are suitable for sintering, according to Mr. Hyde. A high bloating material is not successful because the top layer of such a charge bloats too fast, choking off air from the lower layers. The sintering rate of materials varies tremendously but it is generally considered that a production rate less than 1 cu. yd./hr. is uneconomical.

The speaker briefly discussed types of sintering machines, using details of construction. One of the first used a car mounted on trunnions which could be moved into a firebox, then over a down draft. The round table machine is popular in Europe, Mr. Hyde said, where it is used for recovering sulfur from gases. The continuous sintering machine is, however, the most used and most economical type, he said. The cost of such a plant ranges from $1000-$1250 per sq. ft. of sintering hearth area.

The sintering equipment is about 20 percent of the total cost of a plant, the remainder going for building and quarry development. Direct sintering operating costs are from $1-$1.80 per cu. yd., the speaker mentioned.

Automatic Cement Conveying

George E. Englehard, vice-president of Fuller Co., Catasauqua, Penn., spoke on "New Developments in Automatic Cement Conveying Equipment." Mr. Englehard described types of conveyors in general before limiting his discussion to conveyors applicable to a concrete products plant. First of all, he said, pneumatic conveyors are not suitable for sand or aggregates. Only cement, fly ash or other fine materials can be conveyed pneumatically.

There are many advantages resulting from use of pneumatic conveyors, the speaker said. They permit freedom in plant layout, eliminate the necessity for straight conveyors, material can be delivered almost instantly through them, longer lines are possible, maintenance costs are low and there is no dust problem. In addition, he said, the number of points to which material can be delivered with these conveyors is limitless, and all discharge points and lines can be controlled from a central location.

The Fuller Co. makes the Fuller-Huron airslide and the airveyor system using the Fuller-Kinyon pump. The airslide uses low pressure air (4-8 p.s.i.) to aerate fine material so it will flow by gravity through the enclosed conveyors. The airveyor, which is an older type, forces material through an enclosed chute using high pressure air (80-100 p.s.i.) The latter is not recommended for cement conveying according to the speaker, for the material is too abrasive and too heavy.

High labor costs are increasing the trend towards the use of the airslide, Mr. Englehard claimed. However, a short straight mechanical conveyor is less expensive to install than an airslide for a comparable location, he said.

The Baltimore, Md., plant of V. Paturzo Bro. and Son, Inc., was described and pictured on slides. This plant uses an airslide system to convey cement from silos to the batching bins, and a Fuller-Kinyon pump to force cement through piping from the bulk unloading point into the silos.

Another recently developed device mentioned by the speaker was a bulk cement trailer, manufactured by Gramm Trailer Co. and incorporating an airslide for discharging the cement. The latest model can be used for either cement handling or as an oil tank truck.

Harvey Black, Domine Builders Supply Co., Inc., Rochester, N. Y., told the audience how they could increase the efficiency of their plant operation by cost accounting. He feels it is essential to keep daily records of manufacturing. This in itself won't eliminate delays, he pointed out, but it can show where sources of trouble lie, and appropriate measures can then be taken to rectify them.

One step in the cost accounting system was the installation of operational time recorders on the block machines. The recorders, trade-named Service Recorders, tell quickly the previous day's efficiency. A pendulum scrapes wax off a movable disc to indicate the times in use. The reasons for any down time are then written on the disc and analyzed in the accounting office. Mr. Black estimates a saving of 15-20 minutes production per machine per day because of these for they also tell whether or not the machine was started on time. The workers realize this, he said, and start on time.

The same type of recorder was also installed on delivery trucks, and this too has speeded up deliveries. The drivers know that delays will show up on the disc. Number recorders were installed on the stripper head of the block machines, giving an accurate count of the number of pallets produced. Any wastage is recorded by the offbearer on a blackboard set near his station. A counter on the mixer records each batch dumped, and this has eliminated many errors made in the past in calculating yields.

In summary, Mr. Black said that in the past it hasn't been necessary to have an efficient plant to make a profit, but there will soon come a time, in his opinion, when only the efficient plants will survive.

Reinforced Concrete Masonry

The final speaker at Wednesday's session was the assistant engineer of N.C.M.A., C. J. French, who talked on "Some Applications of Reinforced Concrete Masonry." In some areas reinforced concrete masonry has been used for some time, he said, and mentioned the earthquake areas of the West and the hurricane belt in Florida as examples. However, he continued, this type of construction can be used to advantage anywhere. Other building materials are possibly taking the initiative in this respect, Mr. French said. He pointed out that a 9-story building with load bearing walls is being erected in Chicago using reinforced clay products. He saw no reason why this shouldn't be a concrete masonry project.

An example of the sturdiness of reinforced concrete masonry building was contained in a report on the April 13, 1949, earthquake in Washington. Mr. French said the report was that all such buildings survived all right. Many buildings codes, both within and outside of earthquake susceptible areas, are being changed to include

reinforced concrete masonry, according to the speaker.

Mr. French listed some of the expanding uses of reinforced concrete masonry, and showed slides of some of the methods of construction. Drive-in theaters and swimming pools are good examples of the opportunities available, he said. A recently built theatre has a wall nearly 50 ft. high, and a slide showed its construction. A few companies have taken the lead in developing and promoting this type of reinforced construction, and Mr. French mentioned the Basalt Rock Co. designs, the column designs of William Moors, and the Lock-Wall mortarless wall and plate design of Marietta Concrete Corp., which uses a block 8 x 12 x 32 in. Slides were shown of all the methods of construction.

The fourth and last day of the convention had its morning session presided over by Glenn C. Barnes, retiring president of N.C.M.A. and president of Barnes & Cone, Inc., Syracuse, N. Y. He introduced the incoming president of the National Concrete Masonry Association, who is Horace W. Bush, of Multiplex Concrete Co., East Orange, N. J. Mr. Barnes thanked the board of directors, members, and especially E. W. Dienhart, executive secretary of N.C.M.A. for their help during his tenure of office. He said the new president, Horace W. Bush, had four plants that produced about 23,000,000 standard 8's (or equivalents) per year.

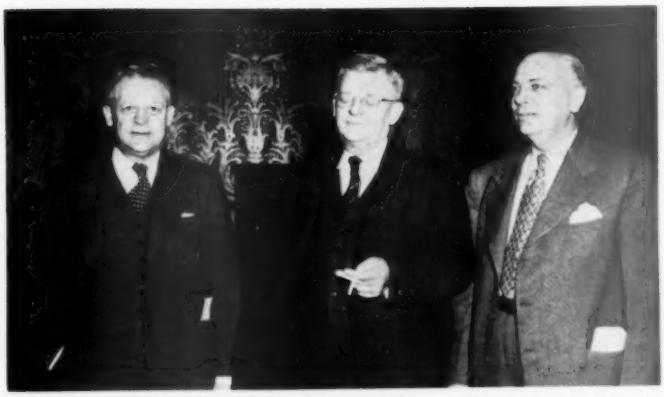
Pension Plans

With Mr. Bush presiding, the first speaker was I. Austin Kelly III, consultant, New York, N. Y., who spoke on "Present Trends in Pension Plans."

The speaker said pension plans were here to stay and with companies which do not have a plan in effect it was, to them, a matter of "when" and "how." Some of the reasons why many companies do not have a plan is because they felt their concerns were too small, or they could not afford it. Others were simply waiting for the union to demand it. He felt that management should put a plan into effect soon because labor was tightening up and there is a tendency for workers to migrate to employers who do have a plan in effect.

It was pointed out by Mr. Kelly that company payments into a pension fund are corporate deductions and in most cases it would amount to paying a 40-cent dollar into a fund from which the employe would eventually be repaid a 100-cent dollar that, in essence, was a bonus. He also said mistakes in setting up a pension plan could be very costly; misunderstandings could occur that would create ill-will and discontent among the company's employes.

The speaker said a first consideration was a clear outline as to who is included in the plan, and he said that it might be advisable to have two plans—one for salaried employes and one for those employed on an hourly basis. In either event it is desirable to "tie down" the eligibility as tight as possible, he said. The speaker then outlined general plans that were acceptable to the revenue department. On this phase he discussed "length of service" to be stipulated and named 5-years as a starter. The maximum age to which one could be admitted to the plan could be the age of the company's president, and he thought that the age 60 could be the maximum otherwise. A minimum age for female help should also be given consideration when setting up a pension plan. The speaker pointed out that some plans are discriminating against older employes. He further discussed the monetary deductions once a person was admitted to the plan and differentiated between percentage deductions from the employe's present salary, or from his average salary. The speaker said he preferred to be on the basis of present salary. He said to weigh past services, but he thought that often this phase was weighed too heavily.



Left to right are Walter J. Manhardt, Best Block Co., Milwaukee, Wis., a past-president; Lewis Lloyd, Alatex Construction Service Inc., New Orleans, La., a director; and Horace Bush, Multiplex Concrete Co., East Orange, N. J., the new president of N.C.M.A.

It was evident from the speaker's talk that preparing a pension plan that worked required a special kind of knowledge because, in most cases, it is difficult for the inexperienced to foresee what could happen, say in 20 years from now. He mentioned one pension plan he reviewed whose provisions made it possible for management to fire an employe when he reached the age of 64, and this without recourse on the part of the pensioneer.

Another point often overlooked is what happens if a man dies before he reaches age 65. Does the widow get anything? Such conditions as these should be carefully weighed and provisions made for them in the pension plan.

Mr. Kelly said if an employe left the plan after participating in its financial support, provisions should be made to return to him (with interest) the money he had so invested. The interest rate, he said, should be a little higher than the local bank rates, for otherwise distrust of the entire plan might disrupt harmonious labor relations.

The speaker stressed the need for flexibility in the plan and thought the plan should be funded through a bank or an insurance company. Banks, he said, won't guarantee future funding, whereas insurance companies might do so. Pension plans should be looked upon as a big, long-range investment and in approaching insurance companies it should be on a "bid" basis.

Mr. Kelly closed with the caution that the plan should have a "stop and go" clause, or a "breather" so that payments from one or all sources could stop temporarily during times of depression. In all events, the plan should be under the jurisdiction of management and that it should sell the plan to its employes and not leave anything to chance.

Manpower Problems

The second speaker was J. A. Wilder, president, Wilder-Feldmann, Inc., Chicago, Ill., who spoke on "Negotiating and Administering a Labor Contract."

Mr. Wilder felt that the foreman was the key man to adjust troubles in his department. This, he said, shows a need for adequately training a foreman for his duties. He should know well in advance that he was slated for a foremanship. It was far too often the case that an employe would be tapped on the shoulder and then told he was the foreman and to take over immediately. In such cases he might not know the essentials of adjusting troubles before they loomed large on the horizon.

The speaker said that setting a precedent in an off-hand manner this year will usually mean it will be in writing next year. He felt that human relations should be kept going the same as machinery.

Following Mr. Wilder's talk, H. A. Feldmann, secretary-treasurer of Wilder-Feldmann, Inc., Chicago, Ill.,

Glenn C. Barnes, left, Barnes and Cone, Inc., Syracuse, N. Y., chats with a fellow New Yorker, Fred Reinhold, Anchor Concrete Products Inc., Buffalo. Mr. Barnes is the retiring president of N.C.M.A.

H. H. Longenecker, Primos, Penn., chats with M. L. Hackman and M. R. Hackman of Maris L. Hackman Co., Lancaster, Penn.

spoke on "Utilization of Manpower to Attain Maximum Efficiency in Production."

The speaker pointed out that industrial production had far out-stripped human relations and that bosses in industrial plants should have a "follow me" attitude instead of the older and now out-moded tendency to drive the help to attain greater production.

During these times of increasing labor shortages, the speaker called attention to the large amount of labor that is lost in carrying objects from one place to another, and this applied to office procedures as well.

He also called the industry's attention to the fact that the left hand is essentially a holding device, and that the right hand actually did the work. By having an adequate holding device, a worker might get better results as he then could use both hands.

In handling human relations it was pointed out that 99 percent of the mistakes were not what someone did, but how they did it. If each approach was given a little preliminary thought, more harmonious relations could be maintained. He illustrated this point by saying that it was possible to fire a man and still retain him as a friend, if the unfortunate employe was shown that it was to his advantage to seek another job.

Prestressed Concrete

The next speaker was Ross H. Bryan of Bryan & Dozier, consulting engineers, Nashville, Tenn. He chose as his theme, "The Use of Concrete Masonry Units in Prestressed Concrete."

Mr. Bryan illustrated his talk by means of slides which showed the techniques used at Nashville Breeko Block & Tile, Nashville, Tenn., in fabricating prestressed bridge and other structural units using concrete masonry. Buttered joints were used and a special device was shown that enabled the operators to spread the mortar evenly across the joint-face of the block used.

The speaker said that prestressed units, for quality structures, were cheaper than conventional construction methods for many types of work and in some cases 60 to 70 percent saving in steel could be effected. He displayed the cable tension wrenches employed and said Roebling wire and fittings were used. Some highway engineers objected to open-end cables, he said, so a special encased cable and block were in use.

Mr. Bryan said the concrete masonry units used for prestressed work had a compression strength of 3750 p.s.i. of net area and that low block strengths caused creep and flow in the member and these would relieve the stresses in the steel cables used.

Concrete Unit Application

The fifth speaker was William M. Avery, senior field editor of *Concrete Manufacturer*, who gave data compiled from returns on a questionnaire sent to 3000 concrete block manufacturers in the United States and Canada. The replies, he said, represented 20 percent of the industry's 1949 output. The main purpose of the survey was to learn whether or not it was difficult to obtain loans for concrete block construction. The returns showed that 36 percent of the companies who replied did have trouble getting loans and the speaker felt that this problem of acceptance was a real one.

His survey also showed that the investments for plants in the districts enumerated were as follows:

West	$146,000
East	144,000
Midwest	112,000
South	112,000
Canadian	81,500
Average	$125,000

Average capacity of plants as shown by the survey were as follows: (in 8's or equivalents per hour):

West	845
East	715
Midwest	710
South	615
Canadian	380
Average	700

The output for residential construction, according to Mr. Avery, during 1949 was as follows:

East	60 percent of output
Midwest	54 percent of output
South	42 percent of output
West	30 percent of output
Average	49 percent of output

The speaker pointed out that slum areas show a complete lack of concrete masonry structures and that competitive materials have completely monopolized that field.

The speaker closed by pointing out that 1,400,000,000 8-in. equivalents were produced and sold in 1949, and during that year 64 percent of the total masonry wall volume in the United States was built of concrete masonry units.

Roof Slabs

The last speaker was A. W. Schultz, of Zeidler Concrete Products Machinery Co., Clear Lake, Iowa, who chose as his subject, "Precast Lightweight Insulating Roof Slabs."

Mr. Schultz, by means of slides, showed how expanded vermiculite or "Zonolite" was used in small plants to make roofing slabs. He said there were eleven expanding plants producing expanded vermiculite and that roof slabs made of that material offered a type of plant operation that lent itself to small concrete products operations.

To emphasize the value of this type of lightweight concrete aggregate, the speaker said that in one instance, the normal insurance on a conventional roof was $2500, and with expanded vermiculite slabs the insurance was reduced to $1200. He referred his hearers who might be interested in vermiculite to get the bulletin "Zonolite Concrete" for details of its use and designs.

President Horace W. Bush closed the session stating that N.C.M.A. was compiling a list of concrete masonry producers in the United States, entrusting the detailed inventory to local producers in each district. He said in New Jersey that he had listed 200 producer companies.

According to annual custom, separate division meetings were conducted for producers interested in specific aggregates in order to discuss problems peculiar to the several aggregates.

Cinders

Chairman E. H. Brooke of the cinder aggregate meeting appointed Fred L. Bauer, George Mansfield, Sam Paturzo and H. Longenecker as a panel of experts to lead the discussion. Mr. Bauer led off with a discussion of cinder processing and showed two excellent movies of the actual production and handling. His company (The Bauer Co.) is working the cinder stockpiles near Hazelton and Pittston, Penn., in the anthracite region. These piles were accumulated over a period of many years and are being reclaimed by large Tournapulls for crushing and grading. The Hazelton piles are presently being worked, the 22-year accumulation at Pittston having largely been exhausted over a 3-year period.

Sam Paturzo, Baltimore, Md., described the use of the Fuller-Kinyon system for handling bulk cement at his plant which he adopted when cloth bag shipments were stopped. He has three separate plants within one yard and pumps cement to the three points from one central point where the cars are spotted. He also uses an airslide to transfer cement from storage bins to the weigh batchers.

The pipeline is 5-in. diameter and capacity is 250 bbl. per hr., with a vertical lift of 60 ft.

A question was raised as to the use of $CaCl_2$ to prevent the freezing of cinders in order to facilitate discharge from hoppered cars. Mr. Bauer said that a maximum of 1-2 bags is used per car at his operation. Then followed a discussion of freight rates for cinders and the use of the milk of lime treatment and other methods to remove impurities from cinders in order to prevent pop-outs and staining of masonry units. Segregation in bins and other plant operating details were briefly discussed. Keeping a bin full was suggested as one way to minimize segregation.

Waylite

In the Waylite aggregate meeting, Paul Woodworth of the Waylite Co. said that advertising in 1950 exceeded that for 1949 by 60 percent and that advertising in 1951 will more than double that for 1949. Advertising is being carried in the three leading national architectural magazines.

A new Waylite processing plant will soon be in production at Bethlehem, Penn., that will increase national production more than 600,000 cu. yd. per year. Of the 1,200,000 cu. yd. moved in 1950, more than 90 percent was sold to the concrete masonry industry. Research is to be completed on sound reduction through partition walls, there being an increasing use of unplastered walls in buildings. Mr. Woodworth anticipates that there will be a reduction of 40 percent in residential construction in 1951 which will equal the 1949 rate. The lowest level is expected to be in April and May of 1951.

Superock

A small group of southeastern producers discussed problems related to Superock aggregate. Principal interest centered around performance of Superock units in walls, particularly resistance to moisture penetration in areas of high rainfall, and in new developments in plant production.

Enslite

The Enslite aggregate meeting was also held during the afternoon session and was presided over by Walter Cain, Birmingham Slag Co., Birmingham, Ala. Enslite is an expanded slag produced by that company. Many of its properties are of advantage as a lightweight aggregate, according to the speaker. Yield with Enslite is 20-22 block per bag of cement. An 8- x 8- x 16-in. block using the aggregate weighs 29-31 lb. The slag itself weighs 56.5 lb./cu. ft. Low thermal conductivity and high sulfate resistance were other points mentioned. The aggregate is sold in two gradings: coarse, ½ in. to 4 mesh and fine, minus 4 mesh.

The aggregate should be wet before batching in order to fill the pores of the slag and keep cement out, Mr. Cain pointed out. This does not cause any difficulties with the use of air-entraining agents. Since the aggregate is hydrophobic (does not attract water) he recommended placing green block in steam kilns immediately, otherwise there would not be enough water to hydrate the cement.

In regard to fire resistance, the speaker claimed that a Bureau of Standards report on two expanded slags, one of which was Enslite, was most favorable to this material, and also made excellent showing over pumice and expanded shale.

At this point, E. W. Bauman, managing director of the National Slag Association, rose from the audience and made a few remarks. He first brought to the group's attention the book "Blast Furnace Slag," recently published by the association, which is a manual on expanded slag, its properties, uses, etc. Mr. Bauman said that he felt trade names are of advantage to slag producers in selling aggregate, but what he wanted all to realize is that all expanded slags are the same if expanded to the same weight; all physical properties are for the most part identical, he claimed. There is some confusion among architects about fire ratings of expanded slags since tests are made under trade names. The N.S.A. is planning to have Underwriters' Laboratories make tests on slag per se. This will involve getting many samples, but test results are expected this year, he said. Mr. Bauman at one point said he thought producers should combine, or have some kind of working arrangement to sell more slag.

The question and answer period brought out other details of the use of Enslite. Water requirement is 40 lb./bag of cement. This is about a 1:9 mix. A minus ¼-in. grading gives fine texture with good acoustical properties and provides a good plaster base. Smooth surfaces can be produced but only at the sacrifice of strength, since more fines are necessary. A fine texture also takes less paint, it was pointed out.

Shrink mixing gives finer breakdown. It was the opinion of one producer that cement transmits heat more than the slag, and that thermal conductivity could be reduced by reducing the cement ratio.

The aggregate costs about 3-6 cents per block, depending upon the freight rate. It sells for $2.35 per ton f.o.b. plant (½-cu. yd. ton). The average shipping distance of Enslite is 165 miles.

Pumice

Probably one of the most interesting and best attended sessions in the aggregate groups was the pumice aggregate session.

Due to the inability of Jack Counts to be at the meeting, the group requested that Gilbert E. Olson of Builders Supply Corp., Phoenix, Ariz., preside over the meeting.

After reviewing the progress of pumice being used as an aggregate for block and with some of the presiding officers relating some of their own experiences, the meeting was formally thrown open for a round-table discussion. It was interesting to note the various experiences of the different manufacturers who have been using pumice as an aggregate; however, in general the various experiences were quite parallel and the enlightening point was the general public acceptance of pumice blocks. A great deal of time was spent in a discussion of the gradations necessary to produce a good sound pumice block and proper methods of curing. At no previous session has there been such a generous exchange of ideas and general frank open discussion as was evidenced at this pumice aggregate round table. The advantages of the pumice block were brought out as well as some of the difficulties that might be encountered through improper handling and manufacturing and curing processes.

It was the opinion of the assembled group that there was a definite need for active research and future investigations of pumice, either through some appointed laboratory or an active association.

Haydite

During the afternoon of the first day those interested in Haydite and Haydite manufacture gathered for an informal discussion. The meeting was under the chairmanship of George W. Kulhavy, The Carter-Waters Corp., Kansas City, Mo. There was a large number in attendance; however, a high percentage appeared to be users, or users-to-be, of Haydite, and much of their interest, it developed, related to where and how they could buy the material. From the general discussions there appeared to be a marked shortage of that lightweight aggregate, particularly in the areas east of the Mississippi river. This condition prevailed, in spite of the fact that several new plants went into production, particularly in Kentucky, Tennessee and North Carolina. Many older producers apparently enlarged their plants but still shortages existed.

During the discussion on new plants and plant enlargements it was developed that it cost $1000 per cu. yd. per day to build a new Haydite plant, and one older producer said his plant represented an investment 2½ times that amount and attributed the higher cost to pioneering and early experimental work.

(Continued on page 152)

From all parts of Canada and from the United States come delegates to the second annual convention of the National Concrete Products Association. The event was held at the Royal Connaught hotel in Hamilton, Ont., January 29 and 30

MASONRY INDUSTRY EXPANDS THROUGHOUT CANADA

THE SECOND ANNUAL convention of the National Concrete Products Association, an association of Canadian manufacturers of concrete products, was held at the Royal Connaught hotel, Hamilton, Ont., January 29 and 30. The event was well attended and its registration (approximately 250) exceeded that of the first convention a year ago. The excellent displays of the various manufacturers were a highlight of the convention. Officers of the association are: A. D. Wylie, Hamilton, re-elected president; W. C. Coupland, Toronto, 1st vice-pres.; C. Fraser, Windsor, 2nd vice-pres.; R. Cooper, Toronto, secretary-treasurer; the executive directors are: R. O. Barber, Guelph; J. Pennachetti, Thorold; A. Marker, Kingston; W. Kirkpatrick, Woodstock; Carson Luke, Paris; L. G. Desbrisay, Moncton; J. Edwards, Halifax; C. C. Johns, Montreal; J. Bruce, Ottawa; R. Mayotte, Fort William; J. F. Boux, Winnipeg; D. Weldon, Saskatoon; J. A. Russell, Edmonton; and C. McCleary, Vancouver.

The Mayor of Hamilton, His Worship Lloyd B. Jackson, made the opening remarks of the convention, which was international in scope, with a number of American manufacturers and industrial and technical representatives being present. The West, Central, and Eastern Provinces of Canada were represented at the convention. The displays were very attractive and were well patronized by those seeking information on the latest developments in the industry.

At the morning session of the initial day there was given a report on business conditions during the past year, together with an outlook for the present year by W. C. Coupland, Toronto, 1st vice-president of N.C.P.A. This was followed by a report of the N.C.M.A. convention in Cleveland, given by R. E. Copeland, Chicago, Ill., engineering director of N.C.M.A. Mr. A. Brown of the Lumbermen's Credit Bureau then offered some shrewd observations on the subject of credits.

At the afternoon session representatives of the Royal Architectural Institute, National Research Council, and the National Concrete Masonry Association, Chicago, Ill., were speakers. Gordon S. Adamson, M.R.A.I.C. presented an outstanding address on the subject of industry standardization. Problems of production in the industry were discussed at length by R. E. Copeland, Chicago, Ill., engineering director of the N.C.M.A. He stressed the warranted criticism of supplying green block in times of shortage, and insisted on proper curing.

Following the opening dinner, the meeting of the aggregate discussion group was held. Color in concrete, maintaining high standards, the limited supply of lightweight aggregates for an increasing demand for this type of block, were the subjects under consideration and discussion. Fred Reinhold, Anchor Concrete Products Inc., Buffalo, N. Y., used three-dimensional color slides to show the beauty of color in concrete when used with good taste and with good workmanship.

The interest in aggregates dominated the convention. No matter what the subject, it invariably drifted back to the base material used. Mr. Purdee of Canada Cement Co., Ltd., presented an excellent and easily understood discourse on the grading of sand, pointing out that a good concrete sand was not necessarily a good sand for block, explaining the necessity in most cases of additional coarser material in proper ratio. He mentioned having visited many plants where the yield of block per bag of cement was far too low due to the use of poorly graded aggregate.

J. Cook told of the deterioration of cinders, declaring that it is now almost impossible to get good quality cinders in quantity. This, he said, is due to the greater efficiency of modern steam plants, particularly in northern climates, where coal is relatively high in price, and hence a greater incentive to burn efficiently, and leaving a fly ash residue rather than cinders. He said that the manufacture of cinder block is declining in Canada and that manufacturers are looking to other lightweight aggregates to meet an expanding market.

Aggregate produced from blast furnace slag was discussed. This, too, was said to be in short supply. However, there is hope for greater supply as the basic steel production of Canada is presently being expanded. In the city of Hamilton alone, the speaker said, $60,000,000 is currently being spent for additional blast furnaces. It is expected that much of the additional slag will be used for concrete aggregate.

Various individuals, talking off the record, indicated there was an opportunity for geologists, chemists and engineers to find and develop new sources of lightweight aggregates, since the population increase in Can-

(Continued on page 154)

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N.C.M.A. Convention

(Continued from page 150)

One general subject discussed was the need of a National Association of Haydite Producers. There appeared to be a willingness to form such an organization to be affiliated with N.C.M.A., but no action was taken at the meeting.

It was pointed out that the name, Haydite, is private property and a trade-mark that is owned by the American Aggregates Co., Kansas City, Mo., and its use by other producers is based on the premises of a high quality standard, proof of which would probably allow the new producer to use that name. It was also said that no royalties are paid and all domestic and foreign patents on Haydite have expired.

Many lightweight aggregate producers mentioned their products under such names as "Tuffolite," "Featherlite," "Federalite" and similar designations, but whether these were sintered lightweight aggregates or expanded shales was not always clearly brought out. It was our impression that many were sintering processes wherein a fuel (such as coal or coke breeze) is added to the clay and the burning of this fuel in the matrix causes volumetric expansions. This, technically speaking, is designated as sintering, whereas true Haydite is an expanded shale, usually produced in rotary kilns and without fuel admixtures.

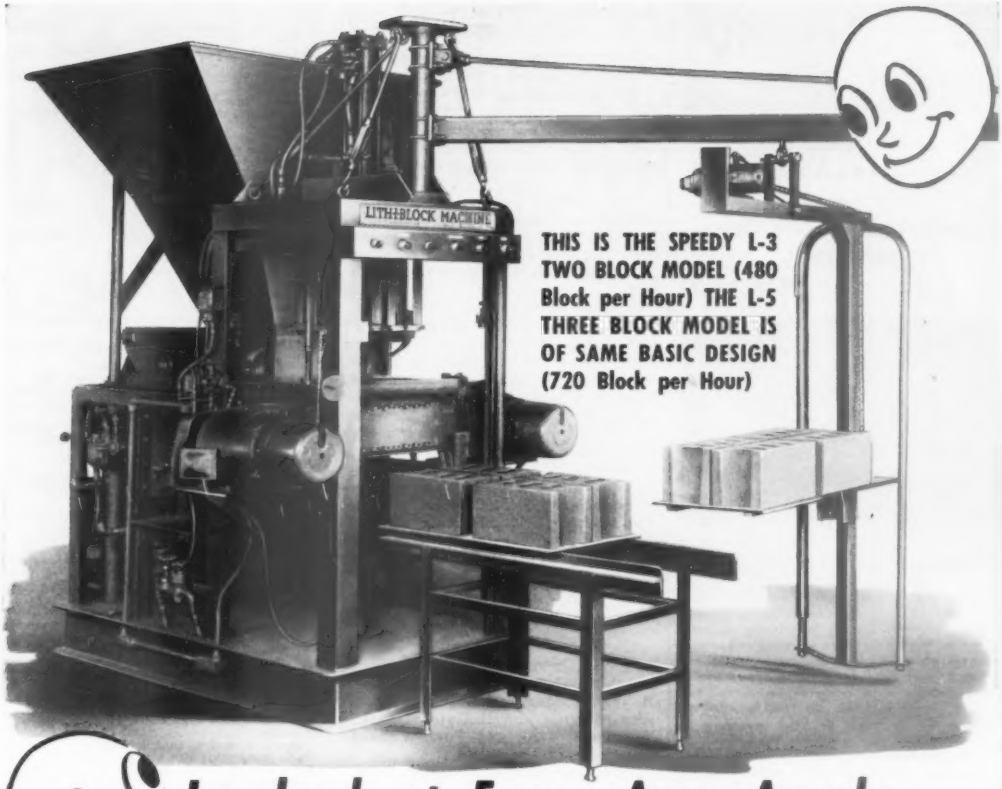
Those on the convention floor were asked how far they shipped Haydite and several replied 200 to 250 miles. One said 400 miles and another mentioned 3000 and later the same shipper mentioned freight rates to a Canadian city of $27 per cu. yd., and $150 to India. One producer in the middle west said that his plant selling price was $4.60 per cu. yd. and the Haydite weighed 1450 lb. per cu. yd. Another (sintered product) said standard 8's made from his lightweight aggregate weighed 25 to 27 lb. with some as low as 24 lb.

The general subject of block textures was discussed and this brought out that most Haydite block users made a ⅜-in. product and fines. A 60 percent coarse and 40 percent fines ratio was in general use for block manufacture. It was evident from the discussions that block texture was not too important a problem and that the general appearance of a structural unit could be made coarse or fine grained by appropriate gradations of the two sizes of Haydite generally shipped. The users of this lightweight aggregate for block indicated they all made at least a 1000 p.s.i. Haydite block.

Celocrete

Further sectional aggregates meetings were held on Tuesday afternoon. Celocrete aggregate was discussed by a group presided over by Jack Crabbs

(Continued on page 156)



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"BRANFORD" LD Vibrator
for General Utility

The "BRANFORD" LD Vibrator is designed primarily for use on forms for concrete products such as pipe, burial vaults, septic tanks, etc. where the cost of mounting vibrators permanently to the various forms might be prohibitive. The ease and speed by which the "BRANFORD" LD Vibrator can be moved by hand from form to form saves both time and extra equipment.

The wedge head of the LD Vibrator fits snugly into brackets which are welded or bolted to the form. The full impact of the powerful LD Vibrator is transmitted directly to the object being vibrated.

SMOOTH, DENSE
CONCRETE PIPE

The wedge head of this "BRANFORD" Vibrator assures quick, easy attachment to the pipe form. Direct contact with the form imparts full, high frequency vibration throughout the mix. This results in a smooth, dense pipe free of voids. Users are enthusiastic about the improved quality of concrete pipe which they are getting with "BRANFORD" LD Vibrators.

Full range of vibrator sizes and styles to fit your various applications. Write for free catalog.

NEW HAVEN
Vibrator Company
145 CHESTNUT ST.
NEW HAVEN, CONN.

Canadian Masonry

(Continued from page 151)

ada would speedily cancel the increase of blast furnace slag for this purpose.

On the second day of the convention there was a bus tour of the plant of Cooke Concrete Products, Aldershot, Ont. Following an inspection of the plant facilities, refreshments were served.

The program for the ladies at the convention included a tour of Hamilton City and a theater party on the first day and a trip to the plant of Sovereign Potters, Ltd., on the second day.

On the morning of January 31, there was a meeting of the new executives at the Albany Club in Toronto.

Reports from the West, as stated by Messrs. Russell of Edmonton and Book of Winnipeg, appeared to indicate a greater percentage of increase in concrete block demand than in other parts of Canada.

The N.C.P.A. is as yet a small association and it is operating on a budget of only $5000 for the coming year. The association is promoting a group insurance plan for the industry as a means of countering the demands of labor. It also has announced association membership seals or plaques are now available to members at $1.50 each.

Regional meetings of the association had been held during the previous month at Victoria and Vancouver, B. C., Calgary, Alta., Edmonton, Alta., Regina and Saskatoon, Sask., Winnipeg, Man., and Fort William, Ont.

Firms represented at the convention were:

Anchor Concrete Products, Inc., Buffalo, N. Y.
Argo Block Co., Ltd., Cooksville, Ont.
Atlas Block Co., Toronto, Ont.
Barber Building Block, Ltd., Guelph, Ont.
Belaire Engineering Co., Ottawa
Bergen Machine & Tool Co., Nutley, N. J.
Besser Mfg. Co., Alpena, Mich.
Bloc de Cement Presse, Ltee., Quebec
Florskoff, E. J., Hamilton, Ont.
Brantwood Concrete Products, Brantwood, Ont.
Bray Brothers, Buffalo, N. Y.
Broom, J., Lumbermen's Credit Ass'n, Toronto
Builders Supply Co., Ltd., Summerville, Ont.
Burlington Brick Co., Ltd., Burlington, Ont.
Canadian Inspection & Testing, Ltd., Toronto
Central Mortgage & Housing Corp.
Crawford, Stanley, Hamilton, Ont.
Crown Concrete Products, Peterborough, Ont.
Cooksville Brick Co., Ltd., Cooksville, Ont.
Cooke, J., Concrete Blocks, Ltd., Aldershot, Ont.
Contractors Machinery & Equipment, Ltd., Hamilton
Cooke Products & Equipment Co., Ltd., Oakville, Ont.
Canada Cement Co., Ltd., Toronto, Ont.
Cannington Cement Block Co., Cannington, Ont.
Century Concrete Products, Toronto
Closs, James J., Lanark, Ont.
Columbia Machine Co., Vancouver, Wash.
Concrete Products, Ltd., Toronto
Cooper Block Co., Ltd., Toronto
Cretite Corp.
Cross Supplies & Paving, Ltd., Windsor, Ont.
Day & Campbell, Mt. Hamilton, Ont.
Dellow Block & Supplies Ltd., Cooksville, Ont.
Dewvey & Almy, Montreal
Dominion Oxygen Co., Toronto
Dundas Block Co., Weston, Ont.
Dunn, W. E., Mfg. Co., Holland, Mich.
Economy Fuel Co., Hamilton, Ont.
Economy Fuel & Supply Corp., Buffalo, N. Y.
Edmonton Concrete Block Co., Ltd., Edmonton, Alta.
Fairbank Block & Supply Co., Ltd., Toronto
Forney's, Inc., Newcastle, Penn.
Gormley Block Co., Gormley, Ont.
Gravell Building Supplies, Hamilton, Ont.
Hadley Houltrap Engineering Co., Ltd., Chatham, Ont.
Hallmark Ass'n, Clearwater, Fla.
Hamilton Builders Supply Co., Ltd., Hamilton
Hannaford, George & Son Ltd., Hamilton
Harbour Brick Co., Ltd., Toronto
Henderson, J. H., Oshawa, Ont.
Howard Construction Materials, Hamilton
Howard Sand & Gravel Co., Ltd., Hamilton
Hunter, W. D., Penetang, Ont.
Interlocking Cement Co., Ltd., Midland, Ont.
Kent Machine Co., Cuyahoga Falls, Ohio
King Brothers, Highland Creek, Ont.
Knickerbocker Co., Jackson, Mich.
Leaside Block & Tile Ltd., Toronto
Linde Air Products Co., Tonawanda, N. Y.
London Concrete Machinery Ltd., London, Ont.
Maple Block & Tile Ltd., Maple, Ont.
Gus Marker Concrete Block Co., Kingston, Ont.
Mayotte Concrete Products Ltd., Ft. William, Ont.
Master Builders Co., Ltd., Toronto
McGinnis Building Block Ltd., Galt, Ont.
Meteor Building Supplies, Ltd., Scarborough Junction, Ont.
McKay, Cecil F., Kitchener, Ont.
McKenzie, J. W., Windsor, Ont.
National Concrete Products, Minico, Ont.
Northern Pigment Co., New Toronto, Ont.
Oaks, J. D. & Son, Guelph, Ont.
Paris Dunbrick Co., Ltd., Paris, Ont.
Peterborough Block Supply Co. Ltd., Peterborough, Ont.
Powere, J. W., Smiths Falls, Ont.
Pressure Pipe Co., Ltd., Montreal
Primeau, J., Concrete Block Co., Toronto
Rogers, Alfred Ltd., Toronto
Ryan Builders Supply Ltd., Windsor, Ont.
Schell Industries, Ltd., Woodstock, Ont.
Scott Building Products, Welland, Ont.
Stearns Mfg. Co., Inc., Adrian, Mich.
Sternson Structural Specialtor, Ltd., Brantford, Ont.
Storrar Dunbrick Co., Ltd., Weston, Ont.
Supercrete Ltd., St. Boniface, Man.
Theiss Machinery Co., Orillia, Ont.
Thorold Concrete Block Co., Thorold, Ont.
Vesset C., Co., Ltd., Quebec.
Warnock, Chas & Co., Toronto
Wettlaufer Equipment Ltd., Toronto
Wilson Concrete Products Co., Belleville, Ont.

Above is seen President Wylie, Mrs. Wylie, and Homer Martin, one of the speakers at the convention

"My Success was Assured When I Installed These Two Machines"

This is a typical statement from Vibrapac Operators everywhere. Other typical statements are:

"The Besser Vibrapac has no peer as far as production is concerned."

"Our experience with our Vibrapacs is very gratifying — we are making money."

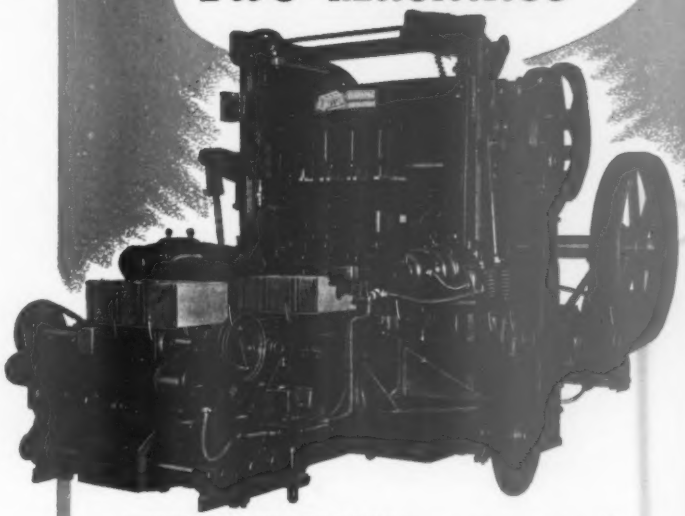
"We were able to increase our working capital by installing Vibrapacs on the Use Agreement Plan."

"Our Vibrapacs give us maximum production at low operating cost."

"We never have any downtime, now that we have Vibrapacs installed in our plants."

A Besser Representative will be glad to discuss with you how you can increase your profits by installing Vibrapacs.

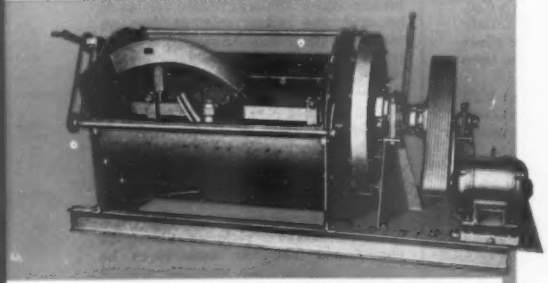
BESSER MANUFACTURING COMPANY
Complete Equipment for Concrete Products Plants
ALPENA, MICHIGAN, U.S.A.



BESSER SUPER VIBRAPAC– Front Pallet Feed model . . . the fully automatic concrete block machine. One man removes finished block with power offbearing hoist and, with no lost motion, returns empty pallets to Vibrapac.

VIBRAPAC FEATURES

- **Fast, continuous production of high quality block.**
- **Fully automatic, including front feeding of pallets.**
- **Slow moving, positive cam operation.**
- **Undirectional vibration from two 5 h.p. motors.**
- **Vibration under 1500 lbs. pressure.**
- **Instantaneous mold release — quick attachment change.**
- **Equipped with anti-friction roller bearings throughout.**
- **Built entirely of steel, electrically welded.**
- **All sizes of block, brick or tile made on one set of Plain Pallets.**
- **One man offbears green block and replaces empty pallets.**
- **Unusually low operating cost.**
- **Backed by 46 years' specialized experience.**



BESSER BATCH MIXER FEATURES–
50 cu. ft. model with 30 h.p. electric motor and V-belt drive. Equipped with steel cut gears, anti-friction bearings, and Wearlong metal mixer blades and liners. All gears completely housed, running in a continuous bath of oil. Heavy duty drum grid. Mixer blade guard. Batch mixers also available in 5-12-18-25-30 and 40 cu. ft. sizes.

BESSER

BATCH MIXERS · SKIP LOADERS · BLOCK & BRICK CUBERS · SUPER VIBRAPAC · SINTERING PLANTS · ACROW CENTERS · ROOF TILE MACHINE

● *Seberger's Concrete Block Co., Gary, Ind., recently enlarged their plant by adding two 74' 18" Farquhar Model 346-2 Sectional Trough Conveyors to feed 250-ton storage hopper. This plant uses one portable and six permanent Farquhar Conveyors in all. (See quotes from letter, below.)*

"We look to FARQUHAR for our CONVEYOR needs!"

Here are quotes from a letter Farquhar recently received from Seberger's Concrete Block Co., Gary, Indiana: " In 1950, we completed 25 years of cement block manufacturing. As our facilities grew, we looked continually to your company to satisfy our conveyor needs. The satisfaction gained since our initial purchase 14 years ago (this first conveyor is still being used to feed our crusher hopper) has been always reaffirmed in subsequent purchases.

"Farquhar Conveyors are ideally suited to our operations, providing high capacity units at reasonable investment and subsequent low maintenance cost. Your service facilities have always been excellent. We certainly recommend Farquhar Conveyors to anyone with a materials handling problem."

THIS MANUFACTURER echoes the sentiments of thousands of builders, manufacturers, coal operators and other industries and businesses who find bulk or package materials handling a problem!

Farquhar offers you a *complete* line of conveyors for portable semi-permanent or permanent use, to handle any and all kinds of loose or packaged materials. There's a Farquhar conveyor that can *save you money!*

WORLD'S MOST COMPLETE CONVEYOR LINE

WRITE for complete information on Farquhar Conveyors to A. B. FARQUHAR Co., *Conveyor Division*, Dept. M-28, 142 N. Duke St., York, Pa., or 618 W. Elm St., Chicago 10, Ill.

Farquhar CONVEYORS SAVE YOU MONEY

HYDRAULIC PRESSES • FARM EQUIPMENT • FOOD PROCESSING AND SPECIAL MACHINERY

(Continued from page 152)

of Austin Crabbs Inc., Davenport, Iowa. Mr. Crabbs introduced Tom Cousins, the new Celocrete representative, of Chicago, Ill. Mr. Cousins admitted that the aggregate is in short supply but said that production changes in the Chicago plant should increase the supply somewhat. The two licensees of the Celotex Corp., Economy Fuel and Supply Corp., Buffalo, N. Y., and Nico Building Products, Dallas, Texas, are also behind in filling orders, he said.

A new catalog, describing Celocrete, was expected to be out in time for the convention, but delays prevented this, according to Mr. Cousins.

Celocrete was described as a machine processed slag. The molten slag at 2600 deg. F. is poured into the machine and a controlled amount of water sprayed on it. The resulting clinker is cooled, crushed and graded. Two grades are produced, coarse (½ to ¼ in.) and fine (¼ in. to dust.).

It was stated that prewetting of Celocrete is necessary before batching the cement. Mr. Crabbs started a lively discussion by outlining his methods of adding water. He adds all water to the aggregate except 5 gal. The mixer man guesses how much to add originally, then more is added if necessary. The indications the mixer man uses, such as that the hardest block slumps on the pallet and slight water streaking on the block, are so reliable, he claims, that the mix is almost always within 4-6 qt. of the correct amount.

There is no practical method of determining moisture content, according to Mr. Crabbs. The yield determines how accurate the mixer man's estimate is. Another point he brought out is that overloading the mixer gave lower strengths, probably because of the crushing action. He recommends using a 45-cu. ft. mixer. A tamper also breaks down the aggregate. In fact, he said, the initial stop of pins on vibrating machines should not be more than ⅜ in., for greater travel than this can break down the aggregate, too.

The grading Mr. Crabbs uses is approximately 1100 lb. of fine and 650 lb. of coarse per batch. This varies somewhat to give 66 block per batch yield. He trys for a strength of 900 p.s.i., no more or less, he emphasizes. The aggregate-cement ratio is 1:6½ by volume. The yield is about 19 block/sack. The two core block he makes weighs 23½ lb. dry weight with a 1¼-in. face shell.

With regard to the supply of Celocrete, Mr. Cousins said additional machine capacity is planned for the Chicago plant. Until this is installed the aggregate will continue in short supply, so no new accounts are being accepted if they will interfere with existing accounts.

An interesting part of this meeting was the showing of three dimensional colored slides by Fred Reinhold. These pictures showed excellent concrete

masonry houses, many of Celocrete units. The three dimensional pictures were effective in showing construction features and details of the model home Mr. Reinhold recently erected. He stated as incidental information that his salesmen are equipped with small stereoscopic viewers, which invariably command the interest and attention of prospective customers, greatly aiding sales, in his opinion.

Limitations on available space prevented including pictures of the Concrete Industries Exposition held in conjunction with the N.C.M.A. convention. These pictures, and a description of the booths, will appear in the April issue.—The Editors.

Alaskan Concrete Plant

ANCHORAGE SAND AND GRAVEL CO., INC., Anchorage, Alaska, in 1950, has erected a Johnson 200-cu. yd. Octobin concrete plant with storage facilities for eight carloads of bulk cement. The plant is equipped with a 75-hp. boiler and a tunnel aggregate conveyor for winter pouring. Concrete is poured with temperatures ranging as low as 20 deg. below zero in this area.

Also, in the past year, the company procured a large deposit of gravel and equipped a portable gravel plant in readiness to start washing operations at the new location in early spring.

Wisconsin Masonry Producers Stress Advertising and Public Relations

THE WISCONSIN Concrete Products Association, the oldest of its kind, held its 31st annual convention at Milwaukee's Plankinton Hotel, February 8 and 9. President Harry Sorenson of Racine reminded the delegates of the origin and growth of the organization and outlined the road of progress and activity which he said it must follow in the future.

One of the outstanding projects accomplished by the association was discussed in his secretary's report by Art Devos. He told of the model concrete masonry dairy barn erected last year in cooperation with the Wisconsin Dairymen's Association. "This permanent exhibit," he pointed out, "will help considerably in the promotion of concrete masonry for farm use."

The speakers' program was opened by Gene Goeb of the Portland Cement Association, who spoke on what he termed "The long-neglected subject of public relations." Warning that there is a tendency to take business for granted today, he said "No business can long survive and prosper unless it is built on the sound foundation of confidence and respect of the public with whom it must deal. There is no time to waste in establishing that confidence and respect." He deplored the lack of contact with future

(Continued on page 161)

Only JAEGER truck mixers are ENGINEERED for bigger payload

Engineered (not stripped) for weight saving — 600 to 1600 lbs. lighter for bigger payload, yet completely equipped and sturdier built. Cost less to maintain than former models; have same heavy gauge of drums and blades.

Engineered for time saving — 10 seconds per yard to end-load dry materials, 20-25 seconds per yard to discharge 4" slump concrete, only 60 seconds to discharge 1" slump.

Engineered for cost saving. All the advantages that make Jaeger the leading and largest-selling truck mixer, now available at hundreds of dollars lower price.

End-Loader or "Sealed Drum" Top Loader Types — in 2 to 5½ yd. sizes. Fluid drive, if you want it. Also "Low Charge" models up to 10 cu. yd. sizes.

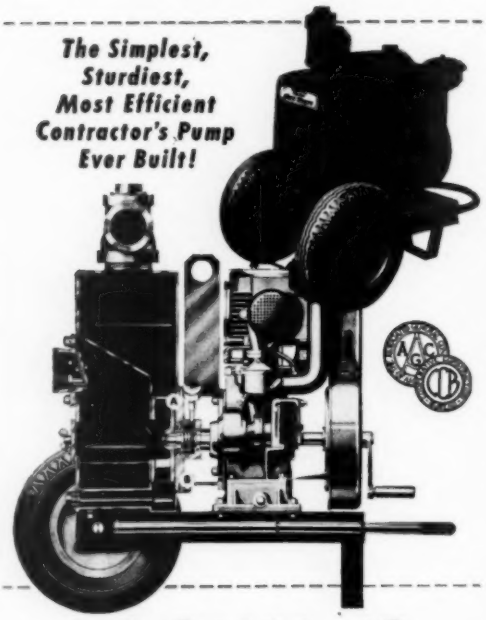
See your Jaeger distributor or write us.

THE JAEGER MACHINE COMPANY, 603 Dublin Avenue Columbus 16, Ohio

AIR COMPRESSORS • PUMPS • MIXERS • HOISTS • TOWERS
AGGREGATE SPREADERS • BITUMINOUS PAVERS • CONCRETE SPREADERS, FINISHERS

Worthington's Answer To Your Toughest Pumping Problems...

The Simplest, Sturdiest, Most Efficient Contractor's Pump Ever Built!



Impeller (A) and shaft seal (B) — the only moving parts

Only two moving parts in a Worthington Blue Brute Self-Priming Centrifugal! And no ports, jets or valves to clog up. Instead, positive self-priming results from expert application of basic hydraulic principles — a Worthington specialty for over 100 years.

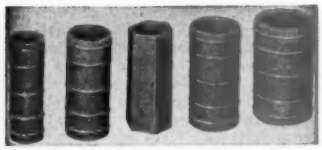
Materials are *right* — in the right places. Impeller and renewable wear plates are of special abrasive-resisting alloy . . . the dual shaft seal is fully enclosed and self-adjusting . . . the steel alloy casing defies rust, erosion and hard knocks . . . the air-cooled engine is easy-starting. So, with all trouble-making gadgets left out, this Blue Brute Portable has absolutely everything you want for fast, dependable pickup, plenty of reserve power — and next to no maintenance!

See your nearby Worthington Distributor for the A. G. C.-rated sizes, base-mounted or with steel or pneumatic-tired wheels.

WORTHINGTON

WORTHINGTON PUMP AND MACHINERY CORPORATION
Construction Equipment Sales Division
Dunellen, New Jersey
Distributors In All Principal Cities
IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB M1-2

THE MARVEL JR.



CONCRETE DRAIN TILE MACHINE

These Marvels are operating daily from Coast to Coast and in Ireland. The Marvel Jr. will put you "over the hump." Ten days normal operation will pay for the machine with profits left over! No plant is complete without a Marvel Jr.
Standard equipment includes either 3-, 4-, 5-, or 6-inch attachments with Heavy Duty Sealed Ball Bearing ¾ H. P. Motor. Attachments are available with which you can make fittings as pictured. We are also the largest manufacturer of Specialty Molds.

Write Today for Complete Information

CONCRETE MACHINERY CO.
HICKORY 5 NORTH CAROLINA

SHAPE FORMER FITTINGS PERMIT YOU TO MAKE THESE

Beautify and Protect Porous Masonry
with ONE COAT AGRASEAL
NEW, WATER-REPELLENT BRUSH COAT SEALS PORES OF CONCRETE AND BEAUTIFIES IN ONLY ONE COAT!

- **For exterior or interior use on cinder blocks, light-weight aggregate and concrete blocks.**
- **Better than two or more coats of ordinary cement coatings.**
- **Fills all voids. No hair checking. No alligator checking. No powdering.**
- **No expensive equipment needed. Apply with ordinary scrub brush or short bristle paint brush.**
- **Easy mixing. No lumps. Quickly soluble.**
- **Easy brushing. Spreads like butter. Cures fast.**
- **Comes in white and seven beautiful shades of ivory, light buff, grey, cream, green, sunny yellow, brick red. Easy to blend for pastel shades.**

Write for details!

TAMMS INDUSTRIES, INC.
(formerly Tamms Silica Co.)
228 N. La Salle Street, Chicago 1, Ill.

TWO YEARS of Successful Operation with ELECTRO VISOR Automatic Quality Control by 17 Leading Block Manufacturers can mean...For You

Increased Production . . . up to 17 blocks per minute

Controlled Height . . . to 1/32 of an inch

Controlled Density . . . to 4 oz. with most materials

AUTOMATIC ELECTRO-VISOR QUALITY CONTROL

M&M ENGINEERING CORP.

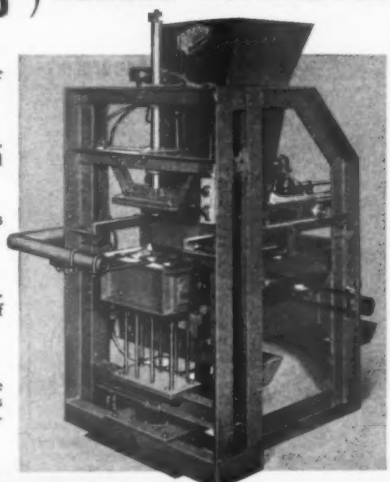
ELECTRONIC CONTROLS FOR INDUSTRY

Cherry 8208

3928 MILLERSVILLE DRIVE INDIANAPOLIS 5, IND.

LARGE PRODUCER ADVANTAGES for Small and Medium Plants assured by the KENT STANDARD BLOCKMAKER

- Produces 5 to 6 blocks per minute from any aggregate.
- Agitation assures uniform delivery of aggregate to the mold box.
- Vibration of mold box assures uniform density of blocks.
- An ingenious press head assures smooth topped blocks of uniform height.
- The push of a button starts the cycle during which the various operations are handled automatically in sequence.



This new semi-automatic machine brings to smaller operators all the high production and low cost advantages heretofore enjoyed only by large producers.

And it makes these competitive advantages available at an investment so small as to be within the means of almost every blockmaker to all of whom it assures greatly increased profit returns.

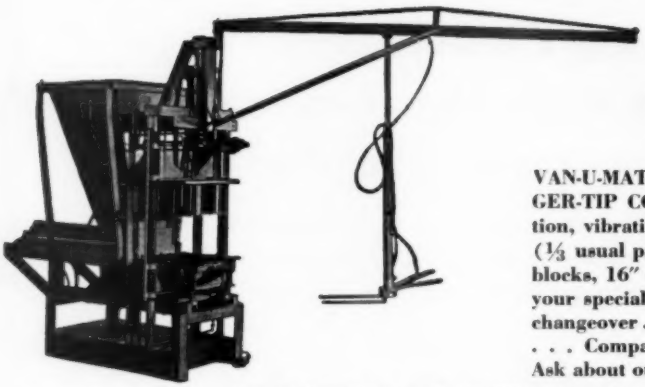
In fact, the many advantages may even justify you in replacing equipment of comparatively recent design. Write for complete information NOW.

Manufacturers of
CONCRETE PRODUCTS MACHINERY
Since 1925

The KENT MACHINE CO. • CUYAHOGA FALLS, OHIO

Announcing the New and Improved

VAN-U-MATIC BLOCK MACHINE



400 BLOCKS PER HOUR

2 BLOCKS IN **1** OPERATION

VAN-U-MATIC has ALL the features . . . "FINGER-TIP CONTROL" pneumatic power operation, vibration and off-bearer . . . Plain pallets (¼ usual pallet investment) . . . Makes all size blocks, 16" or 18" lengths, modular sizes or to your special core requirements . . . Quick easy changeover . . . True dimensional, perfect blocks . . . Compact . . . Easy to install and clean. Ask about our new 3 unit machine.

PARTIAL LISTING OF USERS OF VAN-U-MATIC BLOCK MACHINES

John Haeussler Con. Prod. Buffalo, N. Y.
Fenton Construction Co. Troy, Ohio
G. W. Robertson Hillsdale, N. Y.
Robert-Burkham & Co. Valley Park, Missouri
Northeast Con. Prod. Northeast, Md.
DeAngelo Concrete Units Co. Philadelphia, Pa.
F. H. Yanks Chester, Pa.
Maysville Con. Prod. Maysville, Ky.
Gerald Associates, Inc. Union City, Michigan
Jaeckle Con. Prod. Okauchee, Wis.
Hagan Cinder Block Co. Fernwood, Pa.

WESTMONT WELDING & MANUFACTURING COMPANY, INC.

346 Haddon Ave., Phone COllingswood 5-4769 Westmont, New Jersey

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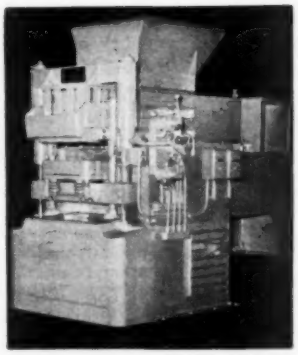
YOU'LL MAKE MORE BLOCKS WITH A *Columbia!*

HERE'S WHY

- PLAIN PALLETS
- VIBRATION PLUS COMPRESSION
- 4-6 AND 8 INCH HIGH BLOCKS
- 4 TO 6 PALLETS PER MINUTE
- OIL HYDRAULIC
- ANY TYPE OF AGGREGATE
- AUTOMATIC OR SEMI-AUTOMATIC

● WRITE TODAY FOR COMPLETE INFORMATION!



Columbia MACHINE WORKS

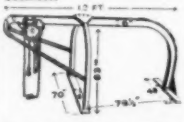
105 MAIN STREET ● VANCOUVER, WASHINGTON

TROLLEY CHAIN HOIST

QUICKLY ADAPTS ANY TRUCK FOR HEAVY DUTY LIFTING, HAULING, LOADING

Lifts and Hauls Heavy Pipes, Floor Joists, Places Them Accurately In Position

The TROLLEY CHAIN HOIST is ideal for hauling and moving pipe, floor joists, etc. These 1½ ton SPUR GEARED HOISTS (WRIGHT or YALE) were used by the Army on 2½ ton 6x6 Cargo trucks. One man can easily lift a pipe or floor joist—load it on the truck—haul it—and place it exactly where desired. A trolley-type, spur geared hoist can be used profitably and economically in your business.



Complete Ready to Use

This spur geared (WRIGHT or YALE) trolley type chain hoist, with chain and safety lock, comes complete with superstructure—ready for use. Complete set weighs approx. 800 lbs., and is ready to mount on any truck.

IMMEDIATE DELIVERY

Brand New War Surplus Trolley Type Chain Hoist complete with super structure and safety lock. Ready to use . . . no extras to buy. Satisfaction Guaranteed. ORDER TODAY—F.O.B. yards, Chicago, Ill.

LIST PRICE	$384.50
NOW OVER ½ OFF	$184.50
LOTS OF 3	$169.50
HOIST ONLY	$105.00
LOTS OF 3	$99.50

WABASH TRUCK PARTS, Inc.

1718 S. State St., Dept. P-1
Chicago 16, Ill.

Wisconsin Meeting

(Continued from page 157)

customers, adding that "Advertising is an investment in the future which this industry can no longer afford not to make."

The executive secretary of the National Concrete Masonry Association, E. W. Dienhart, as he has done for many years, gave the delegates timely information, reporting on the effect of recent government orders on the concrete masonry industry. He told the manufacturers, "Be optimistic; continue to produce, for our product, because of its low cost and dependability, will be needed." He cited the growth of the industry as proof that "We are now an integral part of the construction industry. As it prospers, we prosper; if it falters we do, too." Continuing N.C.M.A.'s presentation, W. L. Markert, director of promotion, offered the delegates the publicity and sales aid programs his organization has prepared.

Providing pleasant relief from business of the convention were speakers William Kaeser, Madison architect, and J. E. Dornoff, sales manager of the Pate Oil Co. Mr. Kaeser discussed architecture, how it should reflect its surroundings and its use. Mr. Dornoff decried today's complacent "don't care" attitude, his advice being, "To harvest you must sow."

Carrying on the technical portion of the program were Carl Menzel, the P.C.A.'s Housing and Cement Products Bureau head, and O. Neil Olson, professor at Marquette University. Mr. Menzel stressed the importance of moisture content to shrinkage of block. "Any manufacturer who improves the curing conditions of his block is actually working for himself," was his theme.

Professor Olson started the group buzzing as he asked "Why 1000-p.s.i. Lightweight Block?" He asserted that the high strength requirement had forced reduction of such desirable features as lightweight, nailability, thermal and acoustical properties and texture. "Let's quit kidding ourselves and get the lightweight code limits back to a reasonable limit," he concluded.

A tour of the Vander Heyden Company's new office building, an outstanding showplace for concrete masonry, proved an unusual treat for most of the delegates and concluded the formal convention program.

As has long been the custom, the last night's festivities consisted of a banquet in the Plankinton's Sky Room, and provided an entertaining climax to the most successful convention in the association's history.

Before adjourning, the convention chose Emil Fehr, Eau Claire, as its new president; Paul Jensen, Racine, vice-president; Ray Minette, Milwaukee, 2nd vice-president; Art Devos, Milwaukee, secretary; Edwin Bartlett, treasurer, and new directors Ray Minette and Edwin Bartlett, Milwaukee, and Harry Sorenson, Racine.

This Body gives you capacity loading - - high speed discharge - - greater payloads - - because IT'S BUILT FOR THE JOB!

Baughman

BULK CEMENT TRANSPORT

Designed and engineered specifically for high speed, efficient handling of cement in bulk at low cost. Eliminates the expense of special built-to-order equipment because it's produced by Baughman's modern assembly line methods—all standard sizes in lengths from 15 to 33 ft.

MORE PAYLOAD! Built of high tensile alloy steel for more strength with less weight . . . more resistance to rust and abrasion. Waterproof loading ports spaced for capacity loading . . . catwalk top . . . climbing ladder. Self-supporting roof. Electro-welded throughout.

Self-Unloading . . . Twin screws give fast action. Special air cells assure quick starting and positive discharge. Powerful motor. All controls conveniently located on outside of body. Simple, positive and immediate. *USUALLY DELIVERED FROM STOCK — WRITE FOR DETAILS.*

BAUGHMAN

BAUGHMAN MANUFACTURING CO., Inc.

1131 Shipman Road, Jerseyville, Illinois

"There is a Baughman Distributor Near You"

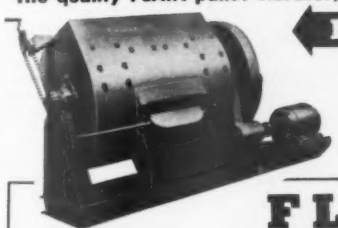
High Production of SUPER BLOCKS (SMOOTH FINISH — SHARP EDGES) the FLEMING WAY

A Block Plant tailor-made to suit your requirement and expenditure. Any capacity from 1000 to 5000 per day.

FLEMING FMC 180

AUTOMATIC CONCRETE BLOCK MACHINE

The quality PLAIN pallet vibrator, uses "Wood" or Steel Pallets



FLEMING FMC 24

PLANT MIXER

Delivers a perfect concrete mix to one or more machines.

Priced as a TWO sack Mixer with THREE sack Drum and Gear Reduction Capacity.

WRITE FOR BULLETINS

Phone Flanders 7800

FLEMING MANUFACTURING CO.

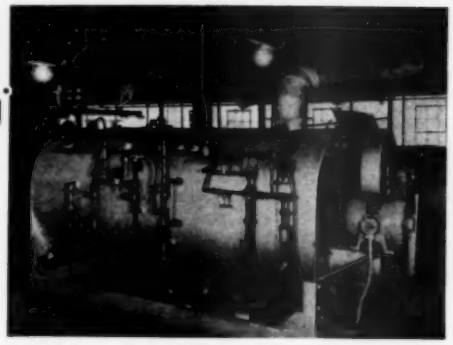
4987 FYLER AVE. • ST. LOUIS 9, MO.

COMPLETE CONCRETE BLOCK PLANT EQUIPMENT

CURE FOR SURE BY VAPOR-THERM*

EMMONS Vapor-Therm* SYSTEM

PROVIDES NEW RESOURCES FOR—



- Better curing conditions producing harder blocks
- Curing multiple kilns automatically and simultaneously by air-electric programming controls
- Low pressure—high temperature vapor delivery to kiln within 3 minutes from time of firing
- 95% fuel efficiency
- Evaporation of moisture if desired

For detailed information write, wire or phone

R. D. EMMONS **303 Melrose Ave., Syracuse 6, New York**
Phone: 9-6200, 9-8363

*Patents Pending

NEW MACHINERY

Torque-Arm Reducer

DODGE MANUFACTURING CO., Mishawaka, Ind., has announced production of a shaft-mounted reducer designed for output speeds from 115 to 330 r.p.m. Claimed to be an innovation in

Shaft-mounted single reduction unit

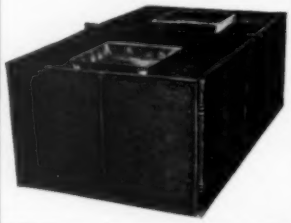
the field of power transmission machinery, the new single reduction unit is being produced in four sizes, which cover capacities up to 27 hp.

Transferring the unit from one machine to another is accomplished by the use of interchangeable shaft-keyed bushings which adapt shaft sleeves to different shaft sizes. While this new reducer can be driven through any V-belt drive, flat belt drive can also be used. Considering its rugged construction, the unit is comparatively light in weight—the No. 12 size weighing but 49 lb.

CARPENTER SEPTIC TANK FORMS

and handling equipment are preferred by large precast tank manufacturers because they use

MINIMUM TIME and LABOR in



Pouring
Stripping
Handling
Resetting forms
Pouring again

LASTLY, and not leastly—ONE MAN makes the delivery with a CARPENTER DELIVERY RIG.

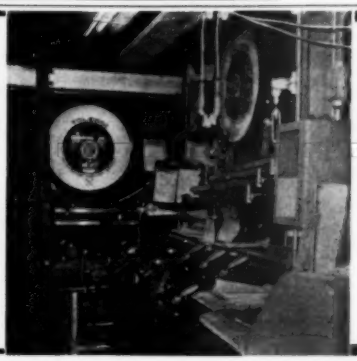
CARPENTER MANUFACTURING COMPANY
Phone 22018
R.F.D. 1, Box 470
Richmond 23, Virginia

BUY U.S. SECURITY BONDS NOW!

[SC]² CONTROL

An important factor in developing large scale commercial ready mixed concrete in

CHICAGO



Insures QUALITY CONCRETE

THE FIRST of three large concrete central-mixing plants under construction at the Chicago plants of the Material Service Corporation is now operating. This modern project will include the latest equipment and methods for producing high quality concrete.

The "heart" of the plant at Yard No. 1 is the (SC)² control that accurately controls batching, and automatically compensates for the moisture content of the aggregates.

(SC)² controls are also being installed in two other plants.

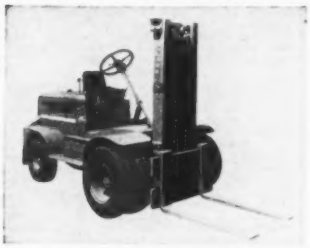
← (SC)² Batching Control Assembly. Air valves admit cement, aggregate, and water to weigh hoppers.

Write for Information

SCIENTIFIC CONCRETE SERVICE CORP.
724 Salem Ave., Elizabeth 3, N. J.

Fork Truck Drive

CLARK EQUIPMENT CO., Industrial Truck Div., Battle Creek, Mich., has announced that the Dynatork drive is now optional equipment on its Yard-



Fork truck with optional drive

lift-60, pneumatic-tired fork truck of 6000-lb. lift capacity. This drive transmits engine power to the drive axles by magnetic induction, across an air gap. The conventional clutch is eliminated, and the standard transmission is replaced by forward and reverse constant-mesh gearing.

Fork Lift Truck

TRANSITIER TRUCK CO., Portland, Ore., has announced a 3000-lb. capacity fork lift truck, with a 64-in. turn-

Fork lift truck of 3000-lb. capacity

ing radius. This truck, the "Hi Duty," is said to meet the needs of many plants that must restrict the operation of heavier trucks, yet are forced to handle loads in the 3000 lb. bracket.

1 of 10 Reasons Why UNIT is a Better Machine

UNIT 1020 — ¾ yd.
A modern, dependable, high-speed machine. Carefully engineered and ruggedly constructed to meet rigid demands. Operation and maintenance costs extremely low. Produces maximum yardage with maximum economy. Full, balanced stability permits hard digging, at long reach, throughout entire circle of operation.

All UNIT equipment has carefully balanced, hook-roller construction. Twin hook-rollers are equalized and mounted on the front and rear of the rotating frame, and are provided with independent, eccentric-pin adjustment. The hook-rollers absorb the upward thrusts only. Weight of the upper structure is supported by four separate, large diameter, conical shaped, drop-forged rollers — each mounted on double roller-bearings. This modern construction relieves all stresses from center-pin and reduces wear of center turntable bushing — heavy lifts are made without rocking. There is quality construction in every UNIT — they have been partners for over a quarter-century! *3rd of a series of ten ads describing outstanding UNIT features.*

UNIT CRANE & SHOVEL CORP., 6431 W. Burnham St., Milwaukee 14, Wis., U.S.A.

Crawler and Mobile models — ½ and ¾ Yd. Excavators. Cranes up to 20 tons capacity.

SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • PARACHUTES • MAGNETS

☒ OSWALT SERVICE is an Investment

UPS PROFITS $60 PER DAY

. . . that pays for itself by increasing production and profits for owners of Vibrapac machines.
Oswalt Service raises output from 600 to 900 blocks or more per hour *without sacrifice of quality.*
The saving in time and labor, as well as the lower per unit cost, results in additional profit of at least $60 per day for every one-machine plant.
Your extra profits soon pay back the total cost of the Service, and yield continuous dividends on your investment—you can't lose!

OSWALT ENGINEERING SERVICE CORP.
1335 Circle Avenue, Forest Park, Ill., Phones: Columbus 1-7073 — Forest 6-3898

WRITE OR PHONE for details of Oswalt-serviced plant nearest you.

CLASSIFIED ADVERTISING

(4-IN-1)
Vibrating Block Machine
SELECT YOUR CHOICE OF (4) DIFFERENT ATTACHMENTS
USES PLAIN WOODEN PALLETS

Beam Lintel Block Attachment
Floor Filler Block Attachment
Bull Nose Block Attachment
4x4x16 Solid Block Attachment
Wood Sash Jamb Block Attachment
F.H.A. Block Attachment
Pilaster Block Attachment
Channel Block Attachment
Chimney Cap Block Attachment
Chimney Block (sq. hole) Attachment
Bond Beam Block Attachment
Curved Block Attachment
Standard Brick Attachment
Modular Size Cored Block Attachment

$395.00
Complete with
BRANFORD AIR-VIBRATOR
installed . . . including overhead pressure head (no extra cost).
EVERY MACHINE IS GUARANTEED
We Pay the Freight Charges

Chase Concrete Machinery Co.
94 Grandview Ave., Buffalo 23, N. Y.
— Telephone: University 2226 —

FOR SALE

1—Besser K.3 plain pallet stripper block machine with 8"-10"-12" attachments, front end conveyor and offbearing hoist.

Very Low Price

1—Besser victory plain pallet stripper block machine with attachments.

Very Cheap

1—9 cu. ft. Besser batch mixer.
1—14 cu. ft. Besser batch mixer.
Also 2,000 plain steel pallets.

OTTO LADWIG & SONS, INC.
4541 N. GREEN BAY AVE.
MILWAUKEE 12, WISCONSIN

PECKHAM ROAD CORP.
50 Harriem Avenue
White Plains, N. Y.

EQUIPMENT FOR SALE

Used ¾ Yard Strayer Concrete Mixing Plant 3-Compartment —Electric Motor Located at Port Chester Plant

Two (2) Dumpcrete Trucks—2½ Cubic Yard Capacity Mounted on Ford Trucks

All of the above complete for the sum of $7,500.00

Located at our Garage:

One (1) Miller No. 491—Model 80-1 Spreader Box with Truck Connections for Sale ..$ 750.00

One (1) Tile Machine—Lampman —with 4", 6" and 8" Molds

One (1) Tile Machine—Quinn—8"

MAKE AN OFFER ON THE ABOVE TILE MACHINES

One (1) Jaeger 10-S Mixer with Le Roi Motor Located at Cairo, New York ..... $ 350.00

$195.00 SALE
GUARANTEED (LIKE NEW) EQUIPMENT

1—Septic Tank Mold	$195.00
1—Chimney Block Plain Pallet Machine	195.00
1—Barret-Craven Hand Lift Truck	195.00
1—3-Way Steel Hopper with (3) Chutes	195.00
1—Brick Machine (7-at-a-time)	195.00
1—Block Machine (1-at-a-time)	195.00
1—½ Bag—Concrete mixer (less motor)	195.00
1—¾ Bag Concrete Mixer (less motor)	195.00
1—Set of Metal Step Forms	195.00
1—Adjustable (3-size) Lintel Form	195.00
1—Syntron (Type 25) Electric Vibrator	195.00
1—Block machine for Curved Block	195.00
3—Cattle Watering Trough forms	195.00
36—Flagstone (cast iron) molds	195.00
20—Clothes Line Post Forms	195.00
20—Fence Post Forms	195.00
20—Highway Sign Post Forms	195.00
20—Real Estate Sign Post Forms	195.00
20—Gutter Pipe Forms	195.00
20—Street Marker Post Forms	195.00
1—Vibrating Table 8' long, 36" wide	195.00
Used Cored Pallets, each as low as	.10

"EVERYTHING WE SELL IS GUARANTEED"

CHASE CONCRETE MACHINERY CO.
94 Grandview Ave. Buffalo 23, N. Y.
— Telephone: University 2226 —

FOR SALE

Semi-Automatic Model HK47 Hydro-Korpak Block Machine with 4—6 and 8" attachments.

Dumm Shovel Mixer Model 10 complete with skip hoist and motor. Two men now making 1900—8" Blocks daily. Both machines perfect. Reason for selling, installing larger machine.

Kent No. 2—5 cu. yd. per hour continuous mixer complete with motor. Brand new never been used still on factory skids.

Quinn Heavy Duty T & G concrete pipe forms for making 5—10": 10—12" and 5—15" pipe 36" long. Complete with shoveling plates and hoppers. Never been used Brand New.

NORCRETE BLOCK CO.
Onley Virginia
Phone Onancock 4

PRICED FOR QUICK SALE

2 Jaeger 1946 2-yd. HI-Dumps Mounted on 1946 Cab-over Dodge trucks, used very little, in Excellent shape.

LOHOF BROS. CO.
P.O. Box 1651 Billings, Mont.
Phone 8724

FOR SALE

1—No. 126—100 HP Erie Economic Boiler: 100 pounds working pressure
1—Stack, 30" Diameter, 70' high, 10 gauge
1—Iron Fireman, No. 4-A Stoker

Boiler used 90 days. In perfect condition. Will sacrifice to move, because room needed for other purposes.

ROANOKE-WEBSTER BRICK CO., INC.
ROANOKE, VA.

FOR SALE

Transit Mix Truck 3 Yd. Ransome Horizontal on EQ Mack chassis. In operation now. Price $2000.00

POINT PLEASANT CONCRETE CO.
416 Richmond Ave.
Point Pleasant, N. Jersey

FOR SALE

1—18" Jeffrey Steel Apron Feeder 20' long, complete with drive. Good condition. $950.00

S. PROSSNER & SONS
Rome New York

FOR SALE

Block Plant and Construction Business: In full operation, 2 Block Machines, Mold Boxes for 4", 8" and 12" blocks, Mixer, Conveyors. Hoppers, lift and racks, pallets. Everything that's needed to operate a block plant. Including all equipment for construction work. 6 x 6—2½ ton truck with hoist. Mixer on rubber, staging, conveyor on rubber. Buildings, dry kiln. 14 acres of land.

EQUIPMENT

Telsmith No. 3 crusher, revolving screen and settling tank, extra screens. ½ yd. Sauerman Drag scraper with hoist and power plant, one water pump. 36' conveyor can be moved.

MANAWA, BUILDING SUPPLY

Handling all building materials, also complete line Jamesway farm equipment, Plumbing, Heating and Cities Service Pumps. Building built in 1949. 40'x100'. Both businesses located opposite one another, ½ mile from town on concrete highway. Good opportunity, only building constructors in town. These businesses will be sold as one or separately. Reason for selling, partnership dissolved. Make offer.

MR. ARTHUR HARDY
Manawa Wisconsin

PRICED FOR QUICK SALE

1—40 ft. Multiplex Concrete Mixer complete, ready to run, in good working order
1—Besser Skip Hoist 40 cu. ft. capacity, complete with Master Gear Head Motor
1—Steadi-flow Kent Continuous Mixer complete with motor, less than two years old, in good working order
1—1½ yard Transport Concrete Truck Mixer (first reasonable offer takes it)

BOICE BUILDERS' SUPPLY
545 Telegraph Rd. Pontiac 19, Mich.

FOR SALE

COMPLETE BLOCK PLANT ALSO BRICK MACHINE COMPLETE WITH RACKS, MOTORS AND LIFT TRUCK.

C. T. JENKINS
824 S. Division St. Salisbury, Md.
Phone 4613

FOR SALE

1—87 Link Belt Chain 35 ft. from center to center head and tail Sprocket 5½x9 Buckets.
1—10 horse, 3 phase 220 Electric Motor 15 horse starter practically new. $550.00.
1—85 Link Belt Chain 30 ft. from center to center 5¼x9 Bucket head and tail pulley $250.00 F.O.B. plant.

T. L. KENDALL
Axton, Va. Ph. Martinsville, Va. 20731

FOR SALE P&H DRAGLINE

Used Model 600 dragline with almost new 1 yd. bucket, 40 ft. boom, motor in good condition burns diesel fuel. Bargain.

LOHOF BROS. CO.
P.O. Box 1651 Billings, Mont.

BULK-CEMENT BIN EQUIPMENT

195, 285, 375 and 465 bbl. capacity bulk cement bins with elevators for truck or railroad receipt of cement. Concrete-products plant and TruckMixer charging types.

L. K. LIPPERT COMPANY
212 EAST FIRST STREET
LONDON, OHIO

FOR SALE

Complete Block Plant—Besser K3 with 4", 6", 8", 12" Setup—2000 steel pallets —2 Revolvator lift trucks—Blythston mixer. Also 300 H.P. motor and Gilson No. 22 pulverizer with conveyors and dust collector. $8600 or will sell in part.

MODERN BLOCK CO., Centerville, Tenn.

ALSO SEE CLASSIFIED ADVERTISING ON OTHER EQUIPMENT IN ROCK PRODUCTS' GENERAL SECTION

FOR SALE

1—Stearns Clipper with 8 inch mold; 1—4 inch mold; 950—12 inch cast iron cored pallets; 1500—8 inch cast iron cored pallets. Can be seen in operation.

Watkins Concrete Block Co., Inc.
4215 R St. Omaha, Nebr.

FOR SALE

Multiplex Double Stripper. No power needed. Make two blocks at a time. 1,000 regular cast pallets. 100 corner pallets. Used two weeks, in new condition. Equipped to make both plain and rock face blocks. Will sell at half price for immediate delivery.

STEWART-NATTINGER, INC.
P.O. Box 48 Springfield, Mo.

FOR SALE
BESSER VIBRAPAC MOLDS

1 Set 3⅝x7 3⅝x15⅝
1 Set 7⅝x1 ⅝x15⅝
1 Set 7⅝x11⅝x15⅝
Including window and corners plus cores less shafts.

F. J. SCHUSTER COAL COMPANY
824 E. Troy Ave. Indianapolis 3, Ind.

FOR SALE

F. C. George 2 unit block machine with hydraulic control, 4" and 8" attachments, sash, lintel, corner, bullnose, etc., approximately 1800 8" pallets and 1500 4" pallets, 100 Corners, 100 sash, 25 lintels. All this equipment for $1200.00.

FRED EGGER AND SONS
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Gasoline Engine—Wisconsin 15 H.P.—V Type air cooled just rebuilt . . $150.00
Owen clam shell bucket 1 yard—fair condition $450.00

THE BOOMER COMPANY
1940 E. Forest Ave., Detroit 7, Mich.

FOR SALE

Following size outer forms for Quinn Pipe machine: All C-76 wall thickness.

42"—T & G 54"—T & G
48"—T & G 60"—T & G

Also bottom rings for 54" and 60".

CONCRETE PIPE PRODUCTS CO., INC.
Box 183 Lake Charles, La.

SUPER K 3 BESSER

Block Machine For Sale. Buy the pallets and get the machine free. Now running, until larger machine arrives.

O. W. HOUTS & SON, INC.
N. Buckhout St. State College, Pa.

FOR SALE

Complete cement block manufacturing plant. Large lot, building 30x40 with four room apartment on second floor. Write

TITUS CO.
Muscatine, Iowa

FOR SALE

Screening Plant in very good condition, consists of Feeder, Rotary Scalping Screen, 9x16 Jaw Crusher, 35 ft. Belt Elevator, 36"x16' Rotary Screen, less Motors—Reasonable offer accepted.

A. SEGA & SONS, INC.
Rt. 7 New Milford, Conn.

FOR SALE

Jackson & Church 6 pocket brick press, capacity 14,000 brick per day. In excellent condition. Replaced with larger capacity machine. Will sell at half price for immediate delivery.

STEWART-NATTINGER, INC.
P.O. Box 48 Springfield, Mo.

FOR SALE

1—Rockercrete Vibrator Block Machine with pressure head. Air stripper and feeder. Made by Link-Belt 4" and 8" mold boxes. 1200—8" pallets, 2000—4" pallets. Condition excellent. Priced for quick sale. Replaced with higher production equipment.

GILMORE, INC.
85 N. Main St. St. Albans, Vermont

FOR SALE

1—14 cu. ft. C. G. Mixer.
2—Miles block machines.
1—Elevator Feeder and attachments, for 4", 6", 8" and 12" blocks.
Also Rock Face Blocks, adequate pallets for all sizes. $3,000 complete.

CAROLINA CONCRETE & BLOCK WORKS
1025 Pender St. Rocky Mount, N. C.

FOR SALE

Used Stearns Power Stripper with 4", 8" and 12" mold boxes to make
2—3⅝"x7 ⅝"x15⅝",
1—7⅝"x7 ⅝"x15",
1—7⅝"x11 ⅝"x15⅝" blocks at one time.
Price: $750.00

ACME BLOCK AND SUPPLY CO.
1506 Mackinaw St. Saginaw, Mich.
Phone 3-2602

MISC. MACHINERY

1—1 yd. Roenig cement mixer—$400.00
1—18 ft. Portable conveyor, ⅝ HP—$250.00
2000 8x16 pallets @ .40; 2000 8x18 pallets @ .40;
2000 10x16 pallets @ .45; 1500 4x18 pallets @ .25;
1 Model Brix Machine hand operated—$75.00.

BALL BROS. BUILDING SUPPLIES
531 E. Brighton Ave. Syracuse 10, N. Y.
Phone 5-8929

30,000 presses STEEL PALLETS in stock. All sizes. Send tracing of your pallet for quotation.

GENERAL ENGINES CO., INC.
307 Hunter Street
Gloucester, N. J.

FOR SALE

Crushed and sized cinder aggregate, tested and approved for the manufacture of cinder blocks. Write:

DULUTH CINDER, SLAG & STONE CO.
Box 116 Duluth 7, Minn.

UNBREAKABLE PALLET RINGS

Write for full information

TEXAS FOUNDRIES
LUFKIN, TEXAS

Complete modern block plant, land building fully equipped, 2 Korpak block and chimney machines. 4200— 4"-8"-12" steel pallets, lift trucks, steel racks. All types molds, 2—2 ton trucks, flat dump. Unlimited cinder supply, 2000 yds. on hand. In operation. Reasonable.
Write:

WHARTON CEMENT PRODUCTS CO.
E. Central Ave. Wharton, N. J.

FOR SALE

ANCHOR 8-bar Tamper, air and power operated; CHEAP BESSER 12 c.f. Mixer, 7½ H.P. 3 Ph. motor, 12 c.f. Skip, 1400—7⅝x15⅝, 1000—11⅝ 15⅝ PRESSTEEL Pallets, 3 Core 45% A.S. All Pallets Like NEW. Sell Together or Separately.

THAMES BLOCK COMPANY
Uncasville Conn.

FOR SALE: Dodson Skip Hoist—near new.
Gorman-Rupp 3" pump. Rebuilt.
Tamper block machine. Dirt cheap.

GROSS BLOCK & TILE WORKS
Milford, Iowa

PACKER-HEAD WINGS

Both McCracken Type and Martin Trowelers—PROVED to last as long or longer — yet cost considerably less. Write for prices.

TEXAS FOUNDRIES
LUFKIN, TEXAS

ANTHRACITE CINDERS

A car load or a train load. Our supply is unlimited. Processed ready to use. Locations on Baltimore & Ohio, Pennsylvania, Lehigh Valley, and Reading Railroads. Call or write

ROY P. McMINDES COMPANY
105 Mace Avenue, Baltimore 21, Md.
Phone: Essex 179

CEMENT COLORS

Write for free samples and prices of "LANSCO" CEMENT COLORS produced in 34 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages; manufactured by

LANDERS-SEGAL COLOR CO.
73 Delevan St. Brooklyn 31, N. Y.

One Monarch Concrete Tile Machine. Will make Drain Tile from 6" to 18".
Two nearly new 7 ft. diameter Chase Mfg. Co.'s Turn Tables.
Ninety steel drying decks—have only been used two years. Will hold 72, 8"x8"x16" blocks. Will work with any block machine, making 3 blocks at a time, using cored pallets and hydraulic off bearer
One 14 ft. Ply-stone Stationary Mixer.

LAKE VIEW CONCRETE TILE COMPANY
LAKE VIEW, IOWA

STOP *that* WATER

With FORMULA NO. 640

A clear liquid—7 different resins in a solvent which penetrates ¼" or more into concrete, concrete blocks, stucco; seals, holds 1250 psf water pressure. Applies quickly—no mixing—no furring—no membrane—no cleanup. Use on floors—wood or concrete.
HAYNES PRODUCTS CO., OMAHA 3, NEBR.

CONCRETE BRICK COLORS
CEMENT COLORS
MORTAR COLORS

made by

BLUE RIDGE TALC CO., INC.
Henry, Virginia

WANTED

Buyer for block, readymix, coal business; growing rapidly in a rapidly growing community. Good prospects despite NPA regulations. Good terms to right party.

Rolla Concrete Materials, Inc.
Rolla, Missouri Phone 827

WANTED TO PURCHASE

Good used fork lift truck on pneumatic tires 4000 or 6000 capacity. Standard make.

CONCRETE PIPE PRODUCTS CO.
Box 183 Lake Charles, La.

Wanted Quinn 24" pipe mold 4' long for wet casting.

NEVADA ROCK PRODUCTS
Box 609 Yerington, Nev.

WANTED

F. M. C.—180 Automatic Block Machine in good condition. In reply state age and F. O. B. Price.

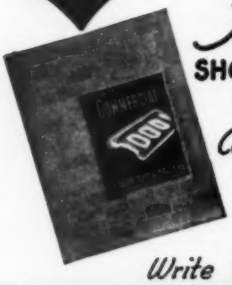
CITY BLOCK AND SUPPLY CO.
Box 446 Chillicothe, Mo.

PALLETS

24 Page Catalogue

Every Block Maker

SHOULD HAVE ONE



Shows a Complete Line of

STEEL CORED PALLETS

Write for it – FREE

THE COMMERCIAL SHEARING & STAMPING CO.

P. O. BOX 719 YOUNGSTOWN 1, OHIO

CEMENT DRAIN TILE

Money-Making Manufacturing Opportunity

Today's tremendous demand for drain tile opens up a choice field for the wide-awake concrete products manufacturer. Either as a business by itself or as a profitable addition to the regular line.

The Champion machine makes all sizes of tile up to 12-inch diameter. With such a range you can supply not only the huge farm market, but many others where drain tile is urgently needed—reclamation projects, home building, road construction, subdivision activities, etc.

Low Cost—High Profits

Tile made on the Champion are outstanding in quality—dense, strong, uniform. Far better than clay tile yet can sell for less—even after allowing a handsome profit. Machine is simple, compact, easy to operate.

Get the facts. Write for interesting literature about the business and the moderate priced equipment.

CONCRETE EQUIPMENT CO.

562 OTTAWA AVE., HOLLAND, MICH.

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POZZOLITH CONCRETE
IN EMPLOYERS INSURANCE BUILDING

To a long list of outstanding structures in which Pozzolith was employed to produce better concrete, has been added the Employers Insurance Building, Dallas, Texas.

Here Pozzolith's cement dispersing, water reducing action gave the light weight concrete on steel deck, and the regular concrete for basement walls easy placeability, designed strength, low permeability and great durability.

Whatever *your* concrete requirements, they can be obtained *at lower cost with Pozzolith than by any other means.*

Full information and booklet on request.

Over 500 Leading Ready-Mixed Plants are now equipped with the POZZOLITH AUTOMATIC DISPENSER

WHY?

Because a producer can, at lower cost:

1. Produce concrete of low permeability . . . with normal Portland cement.
2. Produce high-early strength concrete . . . with normal Portland cement.
3. Produce air entrained concrete without strength loss . . . with normal Portland cement.
4. Produce all of the above properties out of one cement bin . . . with normal Portland cement — stepping up production, reducing inconvenience in handling and cutting costs.

In normal mixes, concrete of any given durability, strength and workability, is produced more economically with Pozzolith than by any other means.

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December 15, 1950

Mr. C. F. Rowell
Vice-President in Charge of Sales
Stearns Manufacturing Company, Inc.
Adrian, Michigan

Dear Mr. Rowell:

It is indeed a pleasure to report to you on the remarkably successful and profitable operation of your one-man Stearns Zipper. We have had one of these sturdy, compact, smaller machines in our plant since August 10, 1950, and have found is satisfactory in every way.

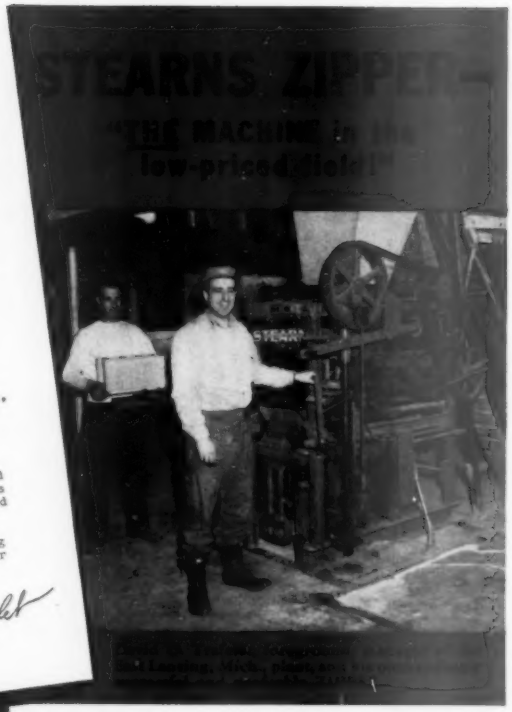
With one operator, we average 270 sharp, square, dense, clean-looking blocks per hour of the same high quality as those produced by the Stearns 15, 50 and Joltcretes. The loss from culls is practically nil, and those finished tops make a big hit with all our customers.

With the Zipper we get 10% more blocks per sack of cement, using the same aggregate as always, and I firmly believe that using light weight aggregate our production rate would increase by 20%.

For the benefit of operators who are not satisfied with their production rates or the quality of their block and for those who are thinking about going into our business with a small cash outlay, I'd like to repeat what I told you on your last visit:

"Your Stearns Zipper is the ideal concrete block making machine for the small plant making up to 2500 units per day. It is the machine in the low-priced field."

Very sincerely,
David D. Seefeldt
Manager



EXTRA HIGH PRODUCTION—EXTRA LOW PRICE!

EXTRA HIGH QUALITY BLOCK—Stearns 15, 50 and Joltcrete quality! "Smooth Pressed Top."

EXTRA RUGGED—The sturdiest, most trouble-free, small, concrete-block-making machine on the market! Simplified construction.

EXTRA SMOOTH OPERATING—Manually-controlled, power-operated, or semi-automatic at slight additional cost.

EXTRA EFFICIENT—No waste motion—human or mechanical. Finest electrical equipment, anti-friction bearings, cored pallets, relineable type mold box. Every part easily accessible.

EXTRA EASY TO INSTALL—Extra compact. Only 6′ x 4′ x 6′. It always fits.

THE ONE-MAN STEARNS ZIPPER HAS BEEN TESTED AND PROVED in accordance with Stearns policy. Write for further information.

PERFORMANCE IS PERFECTION . . . PERFECTION IS PROFIT!

MODERNIZE WITH A STEARNS!
BACKED BY MORE THAN A QUARTER-CENTURY OF KNOW-HOW!

STEARNS
MANUFACTURING COMPANY · INC
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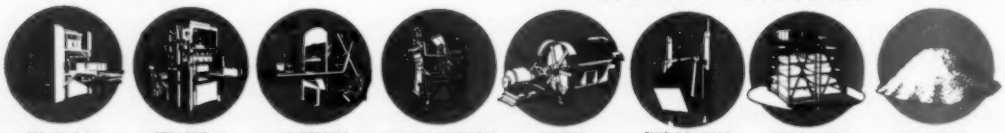


STEARNS 15 | STEARNS 50 | JOLTCRETES | CLIPPER STRIPPERS | MIXERS | SKIP LOADERS | TURNTABLES | SINTERLITE

You increase fragmentation . . . decrease vibration with these Du Pont "MS" Caps

Owners of The Bessemer Limestone and Cement Company, Bessemer, Pa., are satisfied users of Du Pont "MS" (millisecond) Delay Electric Blasting Caps. Theirs is a low-face quarry, approximately 22 feet in height, using wagon drills as shown in the photo below at the left.

"MS" Caps are used at the Bessemer quarry for firing charges of 40 and 60% ammonia dynamite. Experience proves that these Caps greatly enhance the quarry's blasting efficiency by:

1. **Reducing concussion and vibration.**
2. **Substantially improving breakage.**
3. **Minimizing secondary blasting.**

A typical shot, below at the right, shows the excellent fragmentation that consistently results from the use of "MS" Caps.

"MS" Caps are clearly and easily identified by colored tags. You can't mistake them. They're supplied with nylon-insulated wires, protective aluminum foil shielded shunts and are available in fourteen millisecond intervals of delay: MS-25, -50, -75, -100, -125, -150, -175, -200, -250, -300, -350, -400, -450, and -500.

Try "MS" Caps in your own wagon drill quarry blasting operations. Any Du Pont Explosives representative will gladly give you complete information about them. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

The Bessemer limestone quarry is similar to many throughout eastern Pennsylvania.

Good breakage means quicker, more economical removal of rock; less secondary blasting.

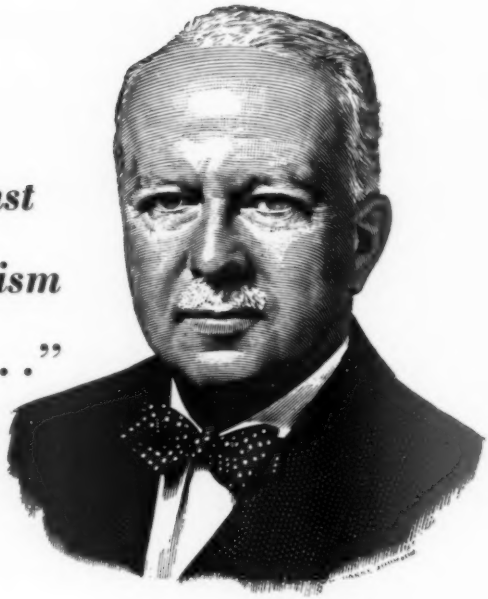
DU PONT EXPLOSIVES

DU PONT
REG. U. S. PAT. OFF.

Blasting Supplies and Accessories

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

"The immunizer against the disease of communism is a certain feeling . . ."



MR. WALTER S. GIFFORD

"It is the feeling of a man who owns a home, a bank account, an insurance policy. *It is the feeling that an employee on the Payroll Savings Plan has when he gazes at his accumulation of Savings Bonds and realizes that here is palpable evidence that he has made a profit on his job—that the profit system works for him as well as for his employer.*"

Mr. Gifford has believed in—and worked for—payroll savings plans for thirty-seven years—since 1913, when, as Statistician of the A. T. & T., Mr. Gifford developed a payroll savings plan for the purchase of A. T. & T. stock.

In 1938, A. T. & T. employees were offered a Payroll Savings Plan for the purchase of U. S. Savings Bonds. To date, Bell System employees have invested ***more than half a billion*** dollars in savings bonds—with a maturity value in excess of $675,000,000.

In upwards of 21,000 large companies, more than 8 million Americans are investing $150,000,000 in U. S. Savings Bonds ***every month.*** To the systematic saving of these men and women—and the whole-hearted co-operation of executives like Mr. Gifford—is due in no small measure the important feeling of ownership shared by the Americans who own 56 billion dollars in U. S. Savings Bonds (against 45 billions at the end of the war!).

Every Payroll Savings Plan is a reflection of the vision and enthusiasm of the top executive of the company. If he gets behind it, ***personally,*** employee participation is high—to the benefit of the country, the company and the employee. If the interest of the Big Boss is active—participation may very well exceed the 50% mark. The top man is the key man in a Payroll Savings Plan.

Get in touch with your State Director, Savings Bond Division, U. S. Treasury Department. He will help you put in a plan . . . or he will show you how to increase employee participation—without undue effort or high pressure tactics.

The U. S. Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the G. M. Basford Company and

ROCK PRODUCTS

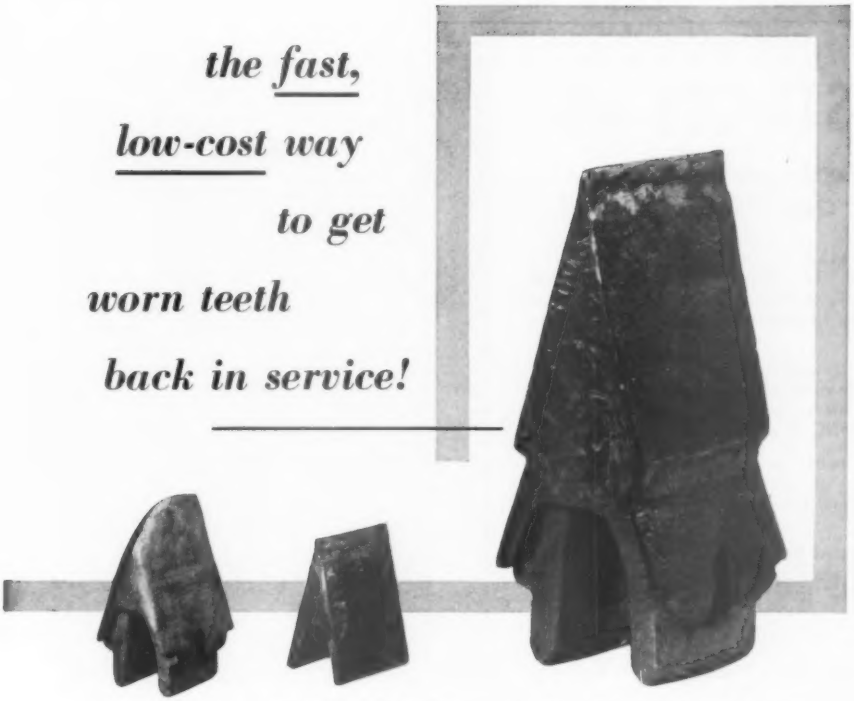
the fast,

low-cost way

to get

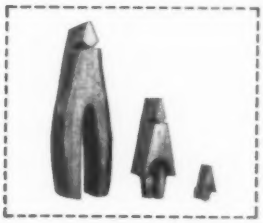
worn teeth

back in service!



1. Worn tooth . . . 2. Plus AMSCO Tooth Repointer . . . 3. Equals like-new tooth—ready for service!

AMSCO® tooth repointers



AMSCO Repointer Bars

3 teeth partially rebuilt with AMSCO Repointer Bars to show sectional view of welding method. These Repointer, or Wedge Bars, are also made in many shapes and sizes. Apply AMSCO Economy Hardface to the rebuilt tooth *—for as much as 3 times longer service!*

● Here's a typical example of a badly worn dipper tooth completely restored to service . . . simply by welding on the AMSCO Cast-To-Size Tooth Repointer. The result is like-new service life and efficiency, plus a long-wearing tooth of Manganese Steel—the steel that actually work-hardens in service. Cost? *Far less than replacement!*

Wherever equipment has teeth that wear, more and more owners are using money-saving AMSCO Tooth Repointers . . . available in a wide variety of styles and sizes.

Get all the facts! Write today for Bulletin W-10-A —showing complete instructions for use.

put LIFE into service with

AMSCO®
WELDING PRODUCTS

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
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Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. in Canada: Joliette Steel Division, Joliette, Que.

RESISTO-LOY will

double the service of your "CHEEK" PLATES

Here is another typical example of how a few pounds of RESISTO-LOY, properly applied to a set of Cheek Plates before they are ever installed in the Crusher, can produce a nice net saving.

It is a perfectly safe estimate that a NEW Cheek Plate can be coated with RESISTO-LOY for less than half its cost — and that plate will operate TWICE AS LONG as one uncoated.

This purchasing of Cheek Plates is one of those so-called minor expense items each year, but a close check reveals that they run into real money.

Get a supply of RESISTO-LOY from our field man. He will show you the simple method of application and how to prevent any warpage in the cheek.

RESISTO-LOY CO., Mfrs., Grand Rapids 7, Michigan

FREE SERVICE for Buyers

Here is the quick way to get information and prices on machinery and equipment. Just check the item (or items) listed below about which you desire information. Then send this list to us, and we will take care of the rest.

TEAR OFF HERE

.....Admixtures, Aggregate
.....Aftercoolers, Air
.....Aggregates (special)
.....Air Compressors
.....Air Separators
.....Asphalt Mixing Plants
.....Bagging Machines
.....Bags
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.....Batchers
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.....Belting, V-Type
.....Belt Repair Equipment
.....Bin Level Indicators
.....Bins and Batching Equipment
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.....Block Machines Concrete Building
.....Bodies, Trailer
.....Brick Machines and Molds
.....Buckets
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.....Cars, Industrial
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.....Screens
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.....Shovels, Power
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.....Trucks, Mixer Body
.....Trucks, Motor
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If equipment you are in market for is not listed above, write it in the space below.

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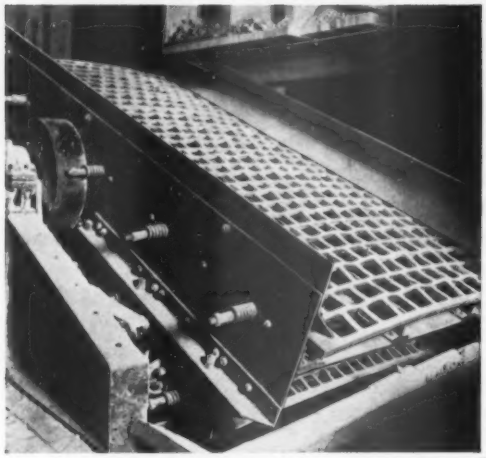
Outstanding Advantages of Hendrick Perforated Plate



for vibrating and shaking screens

- It maintains uniformity of mesh throughout an unusually long service life.
- It can be supplied with any desired shape and size of perforations.
- It can be made—either flat or corrugated—in any required gauge in tank, high carbon, high tensile, and abrasive-resisting steels.
- For screening highly abrasive materials, it is heat-treated to increase its toughness.
- Its full clearance practically obviates clogging.
- The ease with which decks can be changed cuts labor costs.

Write for copy of Hendrick Perforated Plate Catalogue

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Perforated Metals
Perforated Metal Screens
Architectural Grilles
Milco Open Steel Flooring,
"Shur-Site" Treads and Armorgrids

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save time . . .
save money with
Ehrsam electric manlifts

Rapid inter-floor transportation reduces employee fatigue, cuts down accidents, saves the worker's energy for his job.

Tools and light repair parts can be carried to speed up repairs, cut down production loss from breakdowns.

Pictured is the electrically operated, all-steel cage manlift made in 300- and 500-pound capacities. Write today for information about EHRSAM hand and electrically operated manlifts or employee elevators.

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ESTABLISHED 1872 — ENTERPRISE, KANSAS, U.S.A.

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FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

- ★ FLEXCO Fasteners make tight butt joints of great strength and durability.
- ★ Trough naturally, operate smoothly through take-up pulleys.
- ★ Distribute strain uniformly.
- ★ Made of Steel, "Monel," "Everdur." Also "Promal" top plates.
- ★ FLEXCO Rip Plates are for bridging soft spots and FLEXCO Fasteners for patching or joining clean straight rips.

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Excavating • Trenching • Dredging • Rehandling

Capacities ¼ to 3 Yds. . . . Ask for Bulletin No. H-850

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CONCRETE BURIAL VAULTS

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BERG VAULT SYSTEM

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Slurries... *handled at lower cost*

The new WILFLEY MODEL K Centrifugal Sand Pump embodies important mechanical improvements especially adapted to the handling of cement slurry and results in stepped-up production and substantial power savings. Individual engineering. Write for details.

Buy WILFLEY for Cost-Saving Performance

A. R. WILFLEY & SONS, Inc.
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New York Office: 1775 Broadway, N.Y.C.

WILFLEY centrifugal PUMPS

HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

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Exploration for coal and other mineral deposits. Foundation test boring and grout hole drilling for bridges, dams and all heavy structures.

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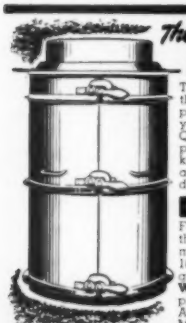
Contract Core Drill Division
MICHIGAN CITY, INDIANA



The "Quinn Standard" FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

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For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost. **WRITE TODAY.** Complete information, prices, and estimates sent on request. Also manufacturers QUINN CONCRETE PIPE MACHINES.

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"... $26,500,000 worth of U.S. Savings Bonds a year under company Payroll Savings Plan..."

CHARLES E. WILSON

"General Electric employees are buying more than $26,500,000 worth of U. S. Savings Bonds a year under company payroll savings plans. Since the inception of our savings plans in 1917, General Electric employees have saved $445,000,000 of which $280,000,000 consisted of the purchase of United States Savings Bonds since May, 1941. The record speaks for itself."

The record of General Electric Company, and the records of more than 21,000 other large companies, prove that employees *want* to save the easy, automatic way—the Payroll Savings Plan.

As of November 1, 1950, more than 8,000,000 employees were buying U. S. Savings Bonds *every month*. While the figure was impressive, it was not as large as it should have been—a fact recognized by many companies.

In November and December, top executives of literally thousands of large companies (employing one hundred or more) decided to check their Payroll Savings Plan and endeavor to increase participation to 60% or more.

Here are a few December reports: in one of the larger units of a leading steel corporation, participation went from 20% to 80.6 per cent . . . a well-known independent steel company (13,710 employees) reported 82% participation . . . another large steel company (100,000 employees), 75% participation . . . one plant of a large rubber corporation climbed to 94% (company average, all plants, 70%—and still going up). Tabulation of all companies exceeding 60% participation in December would literally fill this page.

Higher participation in the Payroll Savings Plan is good for the men and women for whom it builds security. It is good for the company because a saving employee is a better workman, a better citizen. It is good for the country because the month after month purchase of U. S. Savings Bonds by millions of Americans is a most effective check on inflationary tendencies.

Phone, write or wire, now, to Savings Bond Division, U. S. Treasury Department, Suite 700, Washington Building, Washington, D.C. Your State Director has a simple, four-point promotion plan, concluding with a person to person canvass that puts a Payroll Savings Application Blank in the hands of every employee. That's all you have to do—and you'll be surprised at the response from employees who *want* to save.

The U. S. Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

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NEW Link-Belt 1¾ yd. shovel-dragline.
Lorain Model 820, 2 yd. Diesel Shovel.
Northwest Model 95 Diesel Dragline 3½-4 yds.
Bay City 65, 1¼ yd. Diesel Shov-Crane 1948.
Koehring 605 Diesel crane 1½ yd. Boom 99'.
Lima 604 Diesel crane 1½ yd. New 1948.
Lorain 80 Diesel Shovel 1¼ yds. Excellent.
Lima 1201, 2½ yd. Diesel Shovel.
Northwest 80D, 2½ yd. Diesel Shovel.

CRUSHERS

JAW: Acme 10x20, 14x26, 14x28, 10x42, 16x32, 18x32.
Cedar Rapids 20x36, 25x40, Farrell 10x20, 13x30, 14x36, 42x40, 42x60, 48x60. Buchanan 30x42, Type C 40x48. Good Roads Reliance 15x30. Traylor 18x36, 24x36, 60"x42". Allis-Chalmers 30x18. Good Roads 10x30. Telsmith 18x32. Champion 1030, 1040, 1236, 1530.
GYRATORY: Allis-Chalmers-McCully, 6", 7½", 8", 9", 12K, 20" 30" 14" Newhouse, 24", 36" Gyrasphere, 18", 28". Intercone Telsmith, Telsmith 5H, 10-B, 13-B, 16-B. Kennedy Van Saun 7, 19, 25½-S, 37, Traylor Ty 1'8", Ty 2'4", Ty 4½".
ROLL: Allis Chalmers 54x24, Diamond 40x22, Pioneer 30x18, Telsmith 24x16, McLanahan & Stone 18x42; 24"x18". New Holland 24x16.
HAMMER MILL: Sizes 4 Williams Jumbo, Pennsylvania 8X2, 22x22, Cedar Rapids 20x33, Jeffrey 30x42, Jeffrey 36x24, 36x40 Dixie 3650.
BALL MILL: Allis Chalmers 6'24', 5'8"x18', Kennedy Van Saun 7'x5', New 4'x4'; Hardinge 6'x4'; Colorado Iron Works 5'x6'; Marcy No. 64½.
ROD MILL: March 2'x6', 3'x6'. Allis Chalmers 4'x8'. Hardinge No. R 286.
PULVERIZER: Williams 36 Slugger, Day Md. 70.
TUBE MILL: Smith 16B 5'6"x20'. Denver 3'x8'.
PEBBLE MILL: Hardinge conical, Abbe 6'x12'.
RAYMOND MILL: Low side 4 roller, No. 6 with dust collector; etc. complete.

TRANSIT MIXERS

2—REX 5½ yd. hopper, on LF. Macks. New 1947.
2—SMITH Bi-discharge 5½ to 7 yd. on LF. Macks. New 1949.
1—REX truck mixer, 4 yd. T7 No. 407, Mack 6BW.
1—JAEGER 4 yd. horizontal on Int. HB-12.
3—REX 5½ yd. horizontal separate engine driven.
1—SMITH MOBILE No. 5 Mixer Model 465.
Diamond 3 deck Mogul screen, 4'x12'.
Pioneer 4'x8' double deck.
Dorr 8'x26'8" Type DnD, 2'x15" Type 88FR and 2'x15' Type SDFR Classifiers.

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Sauerman Slack line 1 yd. complete with Jaeger Diesel hoist. Practically new.
Sauerman 1½ yd. 750' head 15 HP Elec. Hoist.
Sauerman 1 yd. with Waukesha gas hoist.

TRACTORS

Cat. D8 Ser. 2U with bulldozer DDPCU.
Cat. D7 with bulldozer DDPCU.
Int. TD9 60" tread hyd. bulldozer.
Int. TD14 with hyd. bulldozer.
Int. TD18 74" tread with hyd. bulldozer.

AIR COMPRESSORS

C-P 500 CFM Diesel portable.
C-P 500 CFM stationary 75 HP motor.
I-R 500 CFM Diesel portable.
Sullivan 210 CFM Diesel portable.

READY-MIX CONCRETE PLANTS

Blaw-Knox 3 compt. 300 ton ag. bin and 800 bbls. cement bins with 3 yd. batcher.
Blaw-Knox complete with two 3 yd. transit mixers.
Strayer portable 40 yds. concrete mix per hour.
Johnson 1575 Bbls. cement silo, screw and elevator.
Johnson 180 tons, 4 compt. aggregate, 4 yd. concentric batcher, cement silo 888 barrels.
Butler 300 ton—3 compt. bin; 1 compt. 400 bbls. bulk cement. Complete.

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1000 gal. on Autocar truck. Excellent.
New Kinney 600 gal. skid mounted.

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B G model 848 Bit Concrete Mixing.
Barber-Greene 830-840 Hot Mix Plant.
Madsen Asphalt 4000 lb. capacity complete.
Pioneer 154V Crushing and Screening complete.
Pioneer No. 412 VW portable washing & screening.
Cedar Rapids Model B Asphalt Plant Complete.
Cedar Rapids Travel Mix Plant.
Iowa Model 2A Crushing and Screening.
Universal 800 Crushing Plant, portable on pneu
Cedar Rapids Pitmaster crushing and screening.
Cedar Rapids Two Unit Mobile Crushing.
Cedar Rapids Model AAA Crushing.

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Morris 10" elec. with cutter. Steel hull—49'x9'x5'.
Ellicott 8" with cutter, Diesel Hull 48'x18'x3'6".
8" Hydraulic, Diesel. On 32'x8' steel pontoons. Practically new.
Dredge pumps:—Morris 10"—Erie 8"—Amsco 8" type "M."

DERRICKS

American 50 ton stiff leg derrick 100' Boom.
Custom built 15-ton stiff leg 110' Boom.
Lambert 25 ton Guy derrick 115' bm.
American Terry 20 ton Guy Derrick 100' bm.
American Terry 20 ton stiff leg with hoist.
American 25 ton stiff leg derrick 90' boom.
Special 23 ton stiff leg derrick 100' boom.
Lambert Steel Guy derrick 20 ton cap.

RICHARD P. WALSH CO.
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Cortland 7-0723 Cable: RICHWALSH

BOILER: Erie City 150 H.P., return tubular, 4" tubes, 150 lbs. working pressure, pin hole grates and all fittings.
CLAMSHELL BUCKET: Blaw Knox, 2 yd. capacity, NEW condition.
BOOT BUCKET ELEVATORS: 3—63 ft. c-c. manganese steel chain, buckets 16" wide.
SCREW CONVEYOR: 12"x22 ft. with center bearing, 87 RPM, capacity 30 TPH.
CHAIN: 400 to 500 ft. Jeffrey No. 3 Malleable roller chain with DE-1 attachments every fourth link.
COMPRESSORS: Sullivan WN4, angle compound, 22x13x14 with 500 H.P. synchronous motor, Worthington 22x21x23 with 600 H.P. synchronous motor.
FANS: 3—Buffalo Forge Co. No. 12 Turbo Conoidal Fans, 6" shaft, 50 H.P., A.C. motors.
SCREENS: 1—Rotary, heavy duty, scalping Screen, 6 ft. dia. x 12 ft., open end, roller type. 1—Allis Chalmers 5'x14 ft., single deck.
CRUSHERS, GYRATORY: Various makes, size 12"x44" up to 42"x134".
CRUSHERS, JAW: Various makes, 3"x5" to 48" x60".
CRUSHERS, REDUCTION: Symons 2 ft. and 3 ft. Telsmith 2 ft., 3 ft. and 4 ft., Gyrasphere, Traylor 4 ft., type TY.
CRUSHERS, SPECIAL: 1—Allis Chalmers Superior 30" and one 7½ K, Gyratory. 1—Farrel 18x36" Jaw.
DRYER and KILNS: 5 ft. x 40 ft. up to 10 ft. x 90 ft., single and double shell.
PULVERIZERS: 7'x9' Ball Mill with 250 H.P. motor, Marcy 7'x16' Rod Mill with 200 H.P. motor, Hardinge 5'x22' Ball Mill with 30 H.P. motor. 2—Raymond Mills 5 Roller, high side. 1—Bradley Giant Griffin Mill.
CLASSIFIERS: WEMCO Simplex size 78"x28½ ft. complete.
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EXCAVATORS: 4—Woolridge model TC, power control, Cummins diesel motors.
SHOVELS: 1—Bucyrus Erie 120-B, 4 yd. electric, also, one Bucyrus Erie 170-B, 6½ yd. electric, 3 phase, 60 cycle, 2200 or 4000 volt. 1—Lorain model 57, diesel, 1¼ yd. capacity. 1—Lima 850 combination Shovel and Dragline, 2 yd., diesel 1—Lima 1002 Dragline only, 2½ yd. cap., 80 ft. boom, diesel.
TRUCKS: 6—Euclid FD model, 15 ton, end dump rock body, with 150 H.P. Cummins diesel motors. 3—Euclid model TD 20 ton, end dump, rock bodies, 275 H.P. Cummins engine. 6—Mack 20 ton, end dump, rock bodies, 275 H.P.

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Lansdowne, Pa.
Phila. Phones: Madison 3-8300 — 3-8301

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FOR SALE—1—Set Truck Platform Scales, with Wood Platform, 40,000 lb. Capacity. Platform 9'x18'—Complete with Weigh Beam, etc. Steel Frame.

1—40 H.P. 220 Volt, 1765 RPM Electric Motor, with controls—Continental make.

Will consider trade on "For Sale" Items toward 75 HP Motor.

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4—4x10—2-Deck Tyler Screens Screens complete with drives and electric motors.

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CONE TY: Symons 2, 3 4 and 5½, No. 36 Telsmith. Also Kennedy 19, 25, 27 and 49. Traylor 1'8" and 2'4" TY. Newhouse 7, 10 and 14". Steadman 24, 30 and 36" Impact. Allis-Chalmers Ty. K.
ROLLS: Allis-Chal. 72x30, 54x24, 54x20, 40x15 and 18x10. Pioneer 18x30. Universal 16x24. New Holland 24x16 and 16x10. McLanahan 18x24 and 18x30.
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1—No. 5 Champion Jaw Crusher, 11"x26", rebuilt.
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1—New Holland Swing Hammer Pulverizer, 20"x10".
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Bucket Elevators, open and totally enclosed, new and used, as is or rebuilt.

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22½ ton Browning No. 8, steam locomotive crane, 50' boom, 8 wheels.

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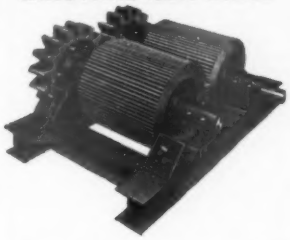

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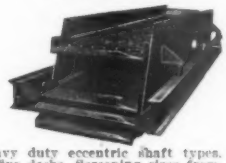

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Worthington 2-stage, water-cooled vertical 250 lb., 60 CFM, diesel starting compressor, new condition.

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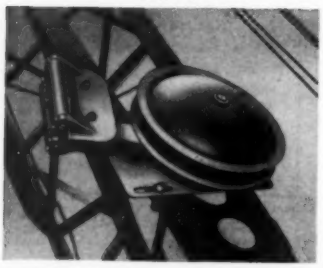

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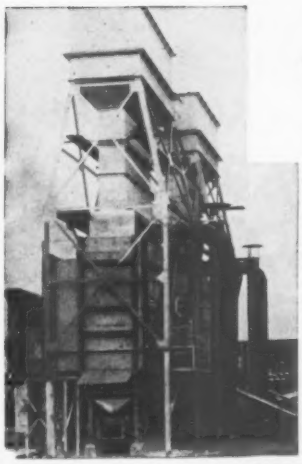

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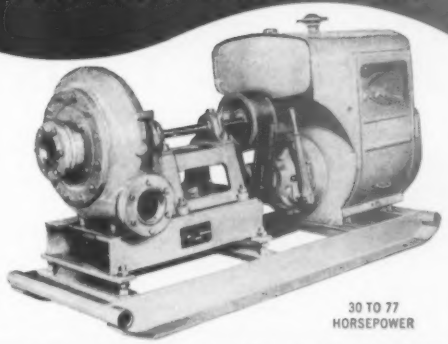

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New design for a wide variety of uses and pumping conditions. 4-inch pump has 30 H.P. air-cooled engine; 6-inch pump has 6-cylinder radiator cooled engine. All wearing parts are of Hi-Chro-Hi, a super hard, abrasion resisting semi-steel. Maintenance is negligible, parts replacement is simple.

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ONE MAN can perform all routine maintenance jobs on this brand new line of Allis-Chalmers large motors. He can remove the upper halves of the end brackets and air baffles and reach right inside the motor with his vacuum cleaner or air hose. There is plenty of room to reach up back of the stator core through air discharge openings in the stator yoke.

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The capsule-type sleeve bearings need not be opened up and exposed when the end bracket halves are removed. The bearings are protected from abrasive dust and dirt while the motor is being cleaned. This eliminates the work usually required to dismantle the bearing, clean and reassemble it during routine maintenance.

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Large stator air discharge openings with removable louvers allow ample room to use an electric or air drill for doweling and bolting the motor to the foundation. These large discharge openings plus adequate air intake openings in the end bells provide cooling air at low velocities.

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You'll be proud of the appearance of the new Allis-Chalmers motor in your plant, too. Clean, simple lines and smooth contours give outward confirmation of its inner strength.

These new design Allis-Chalmers drip-proof and splash-proof bracket bearing squirrel-cage induction motors are built in sizes from 60 hp at 300 rpm to 1500 hp at 1800 rpm. Ask your Allis-Chalmers representative to show you the details of this exceptional new motor or write Allis-Chalmers, Milwaukee 1, Wisconsin for Bulletin 05B7542. A-3251

A-C ALLIS-CHALMERS

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get together to decide on the equipment for a new preparation or beneficiation plant, there's a good chance that they'll agree on the abrasives-handling pumps, at least. That's why you find Hydroseals all over the mining world today, and that's why these pumps are specified on the blueprints of tomorrow. Engineers don't depend on the calculus of probabilities to tell them what abrasives pumps to use. Instead, when they specify Hydroseals, they think in terms of time-proved advantages.

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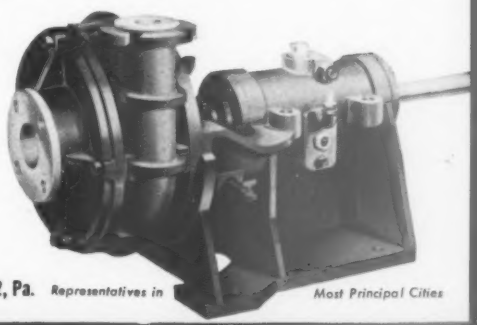
LONG LIFE

...droseals have pumped over ...ion tons of abrasives without new parts or repairs. Abrasives "bounce off" Maximix Rubber parts.

LOW COST

...al efficiency reduces power ...y 1/3 to 1/2. Maximix Rubber parts last 4 to 6 times as long as equivalent metal parts.



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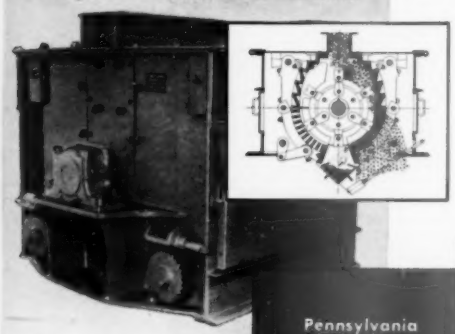
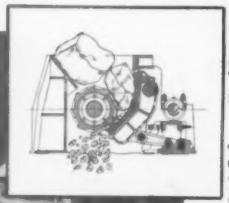
Pennsylvania Reversible Hammermill



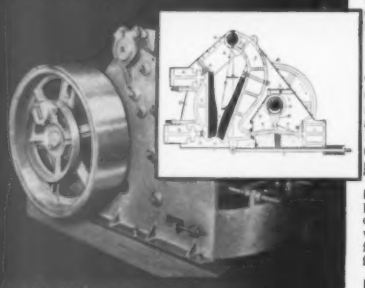
why Pennsylvania makes many types of crushers

Crushing problems are seldom, if ever, identical because of variables such as product, feed size, capacity, moisture content, and physical and chemical structures of material—*and no one type of crusher can meet all of them.* That's why Pennsylvania has a large and varied line, a portion of which is illustrated here. In this line there is a type of crusher adapted to deal with each individual job no matter what it may be, and since our engineers are not limited to only one or two types when making a recommendation, you can be assured there is no bias or prejudice in favor of a specific crusher. This is one of the very good reasons to at least get Pennsylvania's counsel on every crushing job. Even if you aren't ready for a new crusher we'll be glad to check your operation and report on its efficiency. This could well be the first step towards reducing your operation costs.



Pennsylvania Single Roll

Kue-Ken Jaw



Dixie Non Clog Hammermill

What type of crusher do YOU use?

REVERSIBLE HAMMERMILL

The Pennsylvania Reversible Hammermill with 2 Zone Crushing and Adjustable Cage offers great economy in operation and maintenance while producing a coarse or medium fine product without using a closed circuit system. The Reversible feature virtually makes this machine two crushers in one. Press a button—today clockwise—tomorrow, counter clockwise. Send for Bulletin 1034.

SINGLE ROLL

Requiring surprisingly little headroom, Pennsylvania Single Roll Crushers are powerful machines that have big hourly capacities at low cost per ton and can handle wet, sticky and frozen materials without choking or jamming. Massive Breaker Plate is easily adjustable to or from the Crushing Roll. This permits product size change at any time and also compensates for gradual wear of working parts. Send for Bulletin 2011.

KUE-KEN JAW CRUSHER

The improved design of the Kue-Ken Jaw Crusher, using the "crushing without rubbing" principle, is the one great advancement in jaw crushers in many years. It replaces the old, poorly lubricated, slow speed, unavoidably heavy machine that gave operators a low opinion of the jaw. The Kue-Ken gives you — 2 to 5 times greater capacity, 5 to 10 times longer jaw plate life, much lower power requirement, a completely enclosed oil bath lubrication with clean, constantly filtered oil, and other features that put the Kue-Ken way out in front. Send for Bulletin 5011.

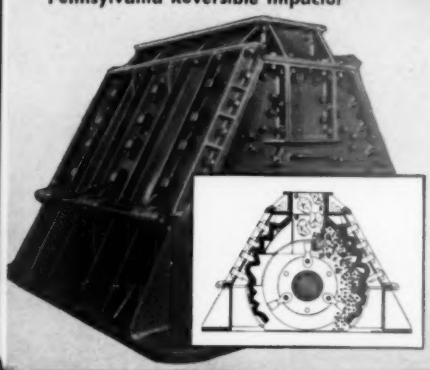
DIXIE NON-CLOG HAMMERMILL

Wherever sticky, wet materials may be encountered, there the Dixie Non-Clog Hammermill is without parallel in efficiency. The moving, extended Breaker Plate keeps the most difficult mucky feeds from choking the mill, holding production at peak capacity. The crushing is done *on* the numerous moving Breaker Plates, therefore wear is distributed over a large area, prolonging plate life, thus reducing maintenance cost.

REVERSIBLE IMPACTOR

The Pennsylvania Reversible Impactor reduces by direct impact at controlled slow speeds, producing cubed particles uniform in size. Reduction ratio is quite large, a reduction of minus 10" feed to ½" in one operation is not unusual (closed circuited with external screening or separating equipment). This is an ideal crusher for high silicas and abrasive rocks, clinkers, minerals and chemicals. The Reversible Rotation feature doubles the life of principal working parts. Send for Bulletin 6016.

Pennsylvania Reversible Impactor



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